

The Iron Age

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New Portable and Semi-Portable Engines.

The portable and semi-portable engines of which we publish engravings are built by the Erie Engine Works, of Erie, Pa., and embrace a number of interesting features. The portable engine shown in Fig. 1 is particularly adapted for portable work where no expensive or permanent foundation is required, the outfit being complete and ready for use when leaving the works. The engine may at any time be detached from the boiler by simply taking out the bolts holding it to the iron saddles on the boiler, leaving no holes to plug, and disconnecting the steam-pipe. The engine proper is of practically the same type as the center-crank and double engines built by the works, and described in our last issue. It is furnished with a steel piston, and steel valve-rods, and wrist-pins. The shaft also is of hammered steel, and the cylinder is provided with a hot-air pocket. The boiler is what is more commonly called a "water-bottom" boiler, often arranged to take the place of the stationary type. It is made of the best charcoal and flange iron. No brick linings are required in the furnace. All parts exposed to fire are heating surface, and protected by water space around the fire, which forms a safeguard against burning the iron. This water space also secures free circulation of water. A fusible plug is placed in the crown sheet. In addition to the "blow-off" valve, hand-hole plates are provided in suitable places for cleaning. The fronts are easily removed, giving free access to the flues and fire-box, and are constructed to allow for contraction and expansion. The door liner is not bolted or riveted to the door, as usually done, and is easily removed when a new liner is required. The draft door hangs on a hinge, and has a slide damper to more easily regulate the fire. The boiler is well stayed, braced and riveted, has wrought-iron dome, and is tested to 150 pounds hydrostatic pressure per square inch. The semi-portable engine is similar to the center-crank engine described last week, but is mounted with a portable boiler on heavy oak timber framed and bolted together, which forms its foundation. For a portable outfit this is claimed to be superior to the style so general in use of having the engine mounted on top of the boiler. The engine being set low is more easily attended, is not heated by the boiler, and relieves the boiler from all strain, giving it no other than its regular duty to perform. The crank-shaft is made longer than regular, and extends underneath the boiler, having an out end bearing on the opposite side, shown in the cut. Driving pulleys are placed on each end of this shaft and are interchangeable. The exhaust is taken from the heater through the bottom of the smoke-box and into the stack. These engines range from 20 to 40 horse-power, while the portable engines are built in sizes varying from 6 to 40 horse-power.

Navigating Under Water.

The art of navigating under water, like that of navigating the air, up to the present time, is yet in its infancy. The requirements of modern warfare, however, have of late greatly stimulated the efforts of naval engineers and others to devise a system of constructing submarine craft which should possess the elements of fair speed, effective control and freedom from unusual hazard to life to a sufficient degree to make the same available for the purposes of offense and defense in torpedo warfare.

Referring to the subject at some length the *Manufacturer and Builder* of recent date says: "Much labor and ingenuity have been expended in the effort to realize these conditions, but thus far, though considerable progress has been made, the results accomplished are not very encouraging, and it is still a mooted question whether the conditions of the problem are not of such a nature as to constitute an insuperable obstacle to its satisfactory solution. There is another view of the question that is worth considering. It is scarcely conceivable that any system of submarine navigation, no matter how efficient, can ever come into use for the peaceful purposes of transporting goods and passengers, so that the utility of any such system will be confined exclusively to the arena of naval warfare, and here the probabilities are very strong that such effective methods of offense and defense could be devised against the submarine boat that the superiority of even a highly perfected apparatus of this nature over the swift torpedo launch traveling on the surface may well be doubted. The latter, taking advantage of the darkness or fogs, and having the advantage of vastly greater celerity of movement, and of the certainty of steering directly at the object of its attack, is able now to accomplish, with greater probability of success, all that the most efficient submarine craft could be expected to do.

"While, however, we do not anticipate that the perfection of submarine navigation

will result in the revolution in naval warfare that is sometimes predicted, it may be of interest to give some details of the most recent advances that have been made in this direction to obtain a view of the present state of the art. Although some of the

(man) enter, and which is closed air-tight by a hinged and bolted hatch. The motive-power is electricity. Reservoirs of compressed air are provided sufficient to supply the needs of the two men for 10 hours, the vitiation of the air being provided against by

reservoirs, which effect the immersion of the boat, are divided into several compartments to prevent the water in them from surging forth and back. There is an air pump for extracting the vitiated air, and a double-acting pump to secure the stability of the

rapidly withdraws, and at a safe distance explodes the torpedo by electricity. The interest of the naval fraternity, however, has of late been chiefly absorbed in the performance of another vessel of this type—the Nordenfeldt submarine boat above alluded to, which was lately given an official trial at Lonskrona in the presence of a large number of officers representing nearly all the European nations. In the Nordenfeldt boat the motive-power is steam, derived from an ordinary boiler when the boat is at the surface, and from steam stored up in hot-water reservoirs when she is submerged. The storage is effected by developing surplus steam while at the surface and forcing it into two strong water reservoirs provided for the purpose. An original feature of the Nordenfeldt boat resides in the fact that the stored steam furnishes the power by means of which the craft is forced to descend beneath the surface; so soon as the steam supply to the machinery is cut off, the buoyancy of the vessel causes her to rise to the surface. No compressed air is required, the natural supply being sufficient, it is said, for the needs of the crew for several hours.

"We give, in conclusion, from published accounts, the following details of the mechanical construction and operation of the Nordenfeldt boat: This craft is cigar-shaped, like nearly all submarine boats from the time of Mr. Ross Winans', with a low glass cupola on top. It is much larger, of course, than the Goubet boat, being, in fact, 64 feet long by 12 feet beam, and 11 feet deep. The hull is of steel, averaging about $\frac{1}{2}$ inch thick, on strong angle-iron frames. Its best feature perhaps is a set of balanced rudders, actuated by a pendulum within the hull, which keep it always horizontal and steady, while two small propellers, placed in sponsons on either side and worked by steam, carry it down to any required depth. As the boat at once rises to the surface unless kept down by steam-power, an accident to the machinery at once carries her up; yet, to guard against the extra danger of leakage, 8 tons of hot water can be blown out, so that she then cannot fail to rise. There is also an ingenious automatic apparatus for causing the vertical propellers to stop when a given depth is reached, and to start again when the boat rises. Four men have been shut up six hours in the boat without inconvenience, but three are now found sufficient, and crews seem more willing to go in her on account of the use of an ordinary steam motor and the provision for breathing ordinary air. The boat has traveled on the surface 150 miles without recoaling. It, of course, has torpedoes in use for action.

"Nearly 40 officers, representing all the European powers, were present at the Lonskrona trials of the Nordenfeldt boat. They seemed to be especially impressed with the contrivance for keeping an even keel by means of the balanced bow rudders, which, being out of the reach of the crew, could not be made useless by neglect or loss of nerve. The boat went down four times in succession to show the ease of working the vertical propellers, the last time staying five minutes at a depth said to be 16 feet below the surface. In a very rough sea she showed her handiness in steering. After the crew were shut up three hours they exhibited no signs of having been inconvenienced. During one day's trial the boat made a run of 20 miles at the surface, with the cupola and a little of the turtle back showing, at 8 knots an hour in a rough sea. Finally the *London Army and Navy Gazette* gives this account of a simulated attack on the tug *Sven*: 'When starting the boat was on the surface, and while advancing she slowly descended, so that when about 1800 or 2000 yards from the *Sven* only half the cupola (some 9 inches) would be seen above water. At this level she advanced until about 1000 yards from the *Sven*, when she descended entirely under the surface and advanced altogether unseen for 400 or 500 yards, which occupied four and a half minutes. During the remainder of the distance the boat rose to the surface and descended again four times while still advancing, until within some 200 yards of the *Sven*—a supposed certain striking distance for any Whitehead—when the boat came to the surface and turned round; the crew, opening up the cupola, came outside, and the experiments were finished.'

The foregoing accounts indicate that decided progress has been made in the practical solution of the problem of constructing submarine boats. But much yet remains to be accomplished.

The American Paper Manufacturers' Association embraces all the factories in the country, numbering probably 1000, representing a capital of \$75,000,000, employing between 40,000 and 50,000 hands, at a cost of \$12,000,000 annually. These factories pay \$50,000,000 per annum for raw material alone, and they can turn out 1,200,000 tons of manufactured product. They now hope to compete successfully with all rivals in supplying Mexico and South America.

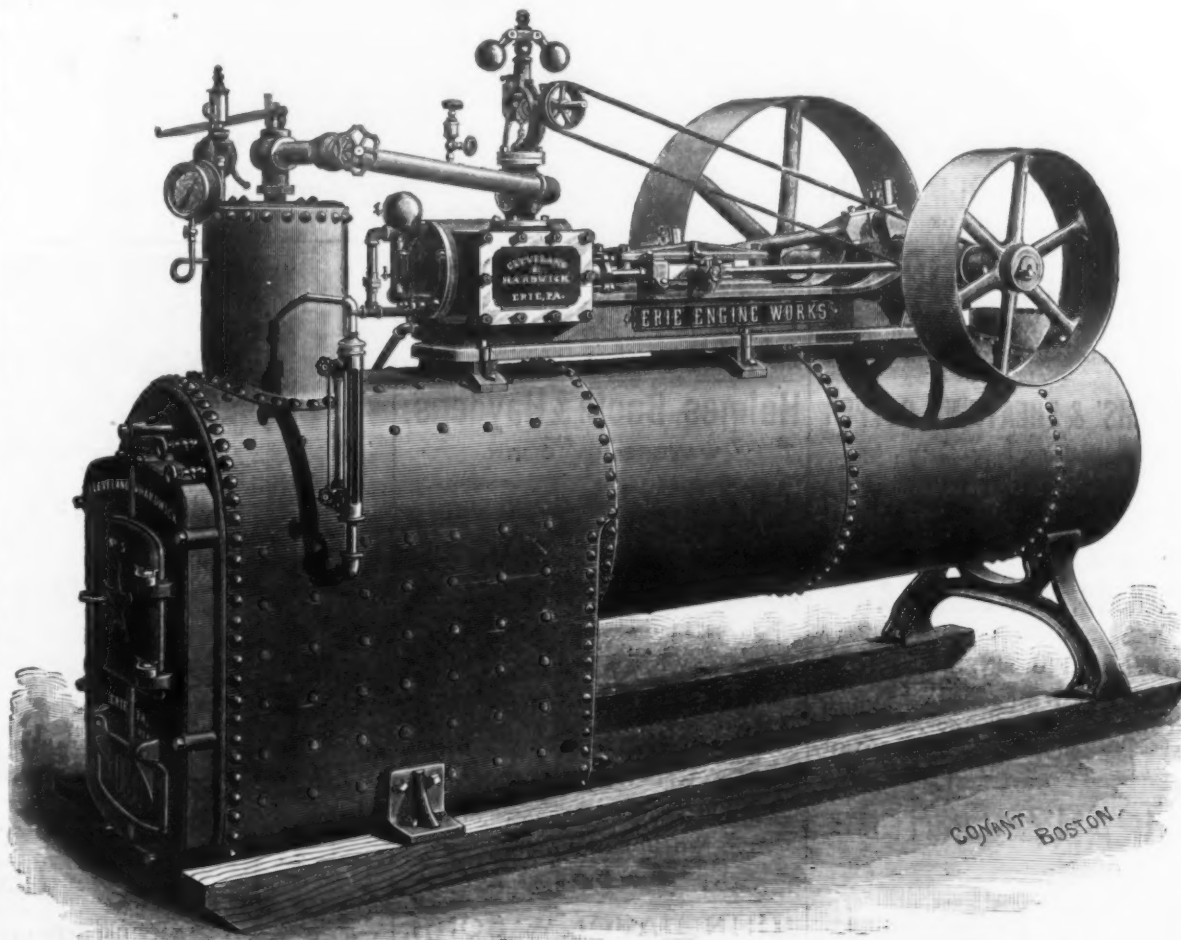


Fig. 1.—Portable Engine.

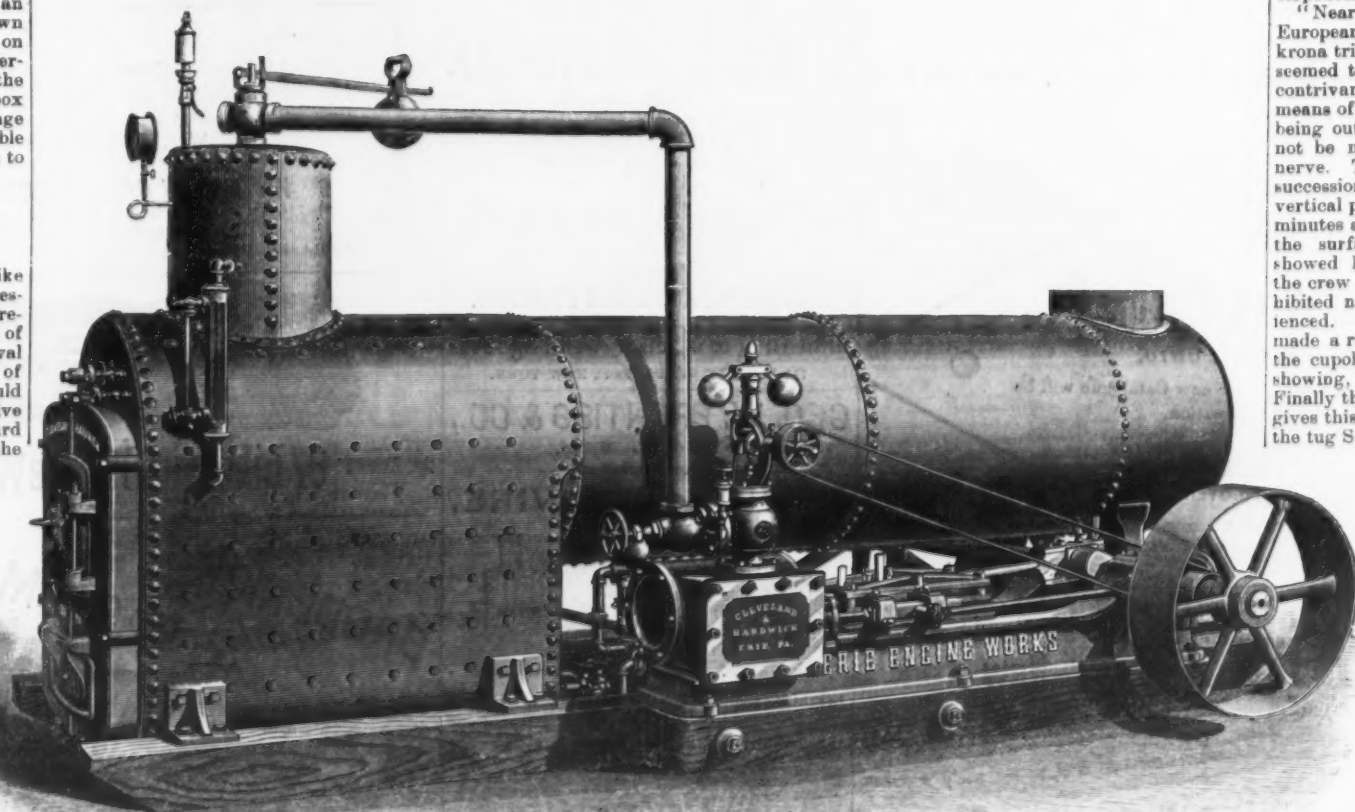


Fig. 2.—Semi-Portable Engine.

PORTABLE AND SEMI-PORTABLE ENGINES, BUILT BY THE ERIE ENGINE WORKS, ERIE, PA.

earliest experiments in submarine navigation were made by Americans, as witness the efforts of Tuck, Holland, Winans and others, it does not appear that any of these inventors met with much success. The experiments of the first two were, in fact, failures outright; those of Winans, it would appear from occasional newspaper accounts, are still continued, though no authentic statements respecting the same are accessible.

"The interest in the question at present centers in the plans of two European inventors—Goubet and Nordenfeldt. The Goubet submarine boat is cigar-shaped, with a dome-shaped elevation in the center, through which the crew (an officer and one

the use of caustic potash, which is distributed through the boat for the purpose of absorbing the carbonic-acid gas given out in respiration. From a recent description of this vessel in *London Engineering* it appears that there are seven glazed openings in the hull, with glass $\frac{1}{2}$ inch thick, protected by external gratings and internal shutters. The two men sit back to back on the compressed-air reservoirs. The craft seems to be full of machinery, except in the space occupied by the men, and their heads go up into the dome. But the boat can thus be made small and compact, so as to be rowed with oars if the dynamo fails. There is a pump for expelling water from the reservoirs when the boat has to rise, and these

vessel. As a safety appliance a heavy weight is attached to the bottom of the boat, which may be released and dropped off in case of an accident requiring a rapid ascent. An explosive signal for help can also be sent to the surface.

"The *modus operandi*, as designed by the inventor, is about as follows: When the two men enter the boat they turn on the compressed air (which is passed through the water reservoirs, so as to become humid) and start the electrical motor. The officer steers the boat under the ship to be attacked, and when the right position is gained he casts off the torpedo, which floats up and attaches itself to the vessel by contrivances provided for the purpose. The boat then

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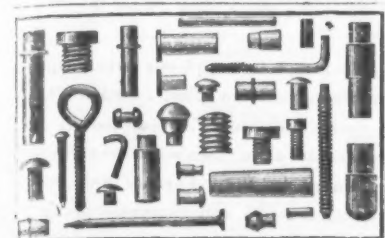


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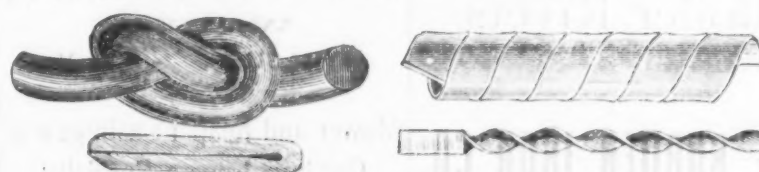
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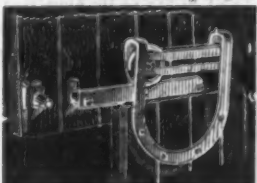
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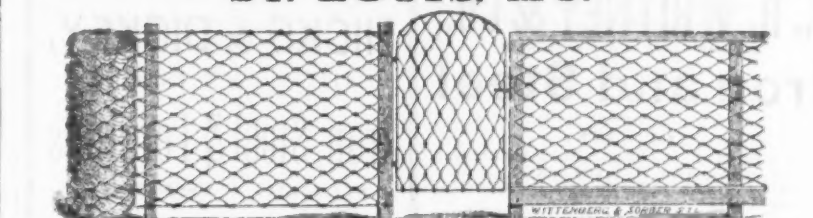
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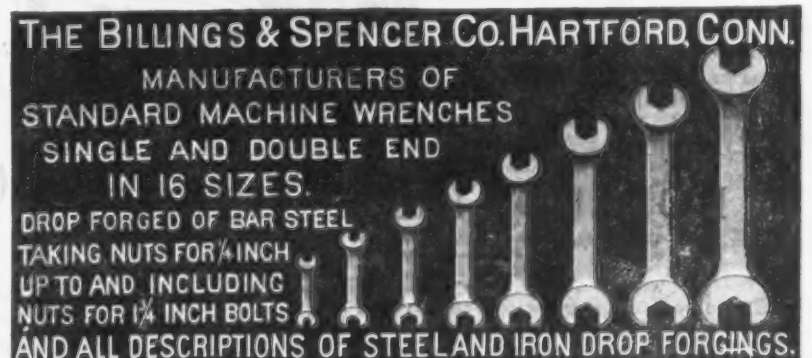
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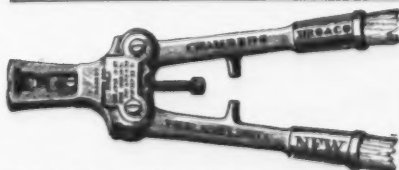
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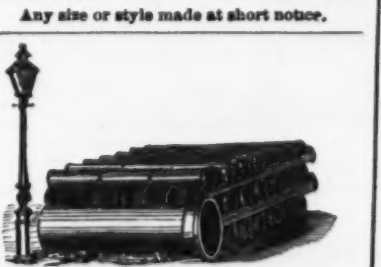
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Special Wheels for Furnace and Mine Cars.

Mechanical Science and Engineering.

The following circular relating to the Section of Mechanical Science and Engineering (Section D) of the American Association for the advancement of science has just been issued:

"The steadily increasing interest and importance of the meetings of Section D justify the expectation of a large attendance of engineers at the Buffalo meeting. The meetings of the American Association offer to students of mechanical science and to engineers opportunities which cannot be elsewhere obtained of conveniently meeting at one time a large number of gentlemen eminent in branches of science to which engineering is closely related, especially mathematics, physics, chemistry, geology and economic science. The scope of this section is broad enough to include all branches of engineering. It occupies a field peculiar to itself, which by no means encroaches upon that of the various engineering societies, but rather adjoins and supplements it. These societies deal chiefly with accomplished practical results, while Section D affords an opportunity for the presentation and discussion of papers upon the application of scientific methods to every department of engineering. The object of the section, in accordance with the name of the association, is the advancement of science. The following may be named as among the general classes of subjects which this section may properly consider within its scope: "Mechanical Science.—In the abstract, including theoretical and applied mechanics. "Mechanical Research.—The collection of data from experiment or observation, the systematic classification of such data and scientific deductions from them. "Problems in Engineering.—Of national importance, and such as are connected with more than one branch of engineering, and therefore might properly be discussed before more than one of the American engineering societies. "The Education of Engineers.—The Best Method of Teaching Mechanical Engineers' was the subject of vigorous discussion at both the Philadelphia and Ann Arbor meetings. The subject must necessarily be enlarged into that of the teaching of all branches of engineering. "The Relation of the Government to Engineers in Civil Life.—What is to be that relation in the future, when the Government will require in its public works engineering knowledge and experience beyond what is likely to be found in its military and naval service? "The Endowment and Organization of Mechanical Research.—The work of Regnault must be continued till the steam engine gives up more of its secrets; that of Fairbairn and Hodgkinson must be repeated with modern materials; testing machines like that at Watertown must be made to do the work for the benefit of science of which they are capable. How is this work to be done? Who is to pay for it?"

The Section of Mechanical Science was organized at the Cincinnati meeting in 1881. In order that its name might more fully express the objects of the section it was changed to Mechanical Science and Engineering at the Ann Arbor meeting in 1885. The thirty-fifth annual meeting of the association will be held at Buffalo, N. Y. August 18-24, 1886.

The Trade of Canada in 1884-85.

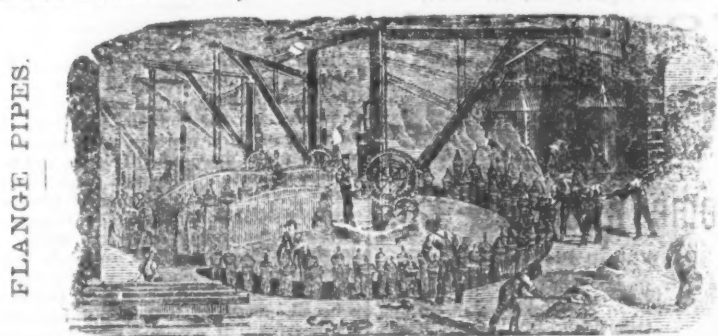
The official returns of the import and export trade of Canada during 1884-85, compared with 1884, show a decrease in the imports of no less than \$13,275,000, or nearly 12 per cent., while the exports fell off by only \$2,100,000, or less than 2 1/2 per cent. As regards the Canadian exports alone, viz., exclusive of the exports of American produce shipped through Canada, it appears that there was a heavy decrease in what are called "forest products," which is largely offset by an increase in "animal and field" products. The decline in the imports is chiefly in manufactured goods, of which a considerable proportion are bought in this country. The following figures show the distribution of the foreign trade of Canada in 1885 as compared with 1884 and previous years:

Proportion of Total Trade Done with Different Countries.				
	1885.	1884.	1882.	1876.
Imports.				
Great Britain.....	40.81	45.68	44.91	45.01
United States.....	45.50	42.79	42.86	48.64
West India and South America.....	4.66	4.32	4.79	2.11
Other countries.....	9.13	7.21	7.44	6.24
Total.....	100.00	100.00	100.00	100.00
Exports.				
Great Britain.....	47.88	48.58	44.53	58.42
United States.....	42.81	41.08	46.94	37.39
West India and South America.....	5.23	5.65	3.85	5.38
Other countries.....	4.08	4.69	4.68	3.81
Total.....	100.00	100.00	100.00	100.00

In the above table the chief features are in the import trade, which shows a decided decrease in the imports from Great Britain, and a moderate increase in those from the United States and other countries, the latter including France, Holland, Italy, China and Japan.

There are at the present time 13 cotton factories in the City of Augusta, Ga., and in the immediate vicinity, employing an aggregate capital of \$5,080,000. Nearly one-half of the product of these mills is being shipped directly abroad, of which a large portion goes to China, Africa and Palestine. A large shipment was made on the 20th inst. to Coventry, a place about 100 miles from Rio, in Brazil. Large quantities of the cloth are also shipped to Boston, and then redressed and colored into fancy colors and stripes, and sold for dress goods, &c. Previous to last year the annual dividends of these mills averaged from 15 to 30 per cent. Last year but little money was made, the dividends running down as low as 5 to 10 per cent, but this year it is said that, while they will not reach the prosperity of years gone by, they will run from 10 to 20 per cent. There are at the present time 23 new cotton mills in course of erection in the South, some of which are of large capacity, and some more are being talked of.

A. H. McNEAL,
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WARRANTED EQUAL TO ANY PRODUCED.
BEST REFINED TOOL CAST STEEL
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SAW PLATES

For Circular, Mulay, Mill, Gang, Drag, Pit and Cross-Cut Saws.

Sheet Steel

For Springs, Billet Web and Hand Saws, Shovels, Cotton Gin Saws,
Stamping Cold, &c., &c.

SIEMENS-MARTIN (Open-Hearth) PLATE STEEL
For Boilers, Fire Boxes, Smoke-Stacks, Tanks, &c.

All our Plate and Sheet Steel being rolled by a Patented Improvement, is unequalled for
surface finish and exactness of gauge.

ROUND MACHINERY CAST STEEL

For Shafting, Spindles, Rollers, &c., &c.

File, Fork, Hoe, Rake, R. R. Frog, Toe-Calk, Sleigh-Shoe and Tire Steel, &c.;
Cast and German Spring and Pile Steel.

"Iron Center" Cast Pile Steel. Finished Rolling Pile Couplers, with Patent Screw Hubs
"Soft Steel Center" Cast Pile Steel. Agricultural Steel cut to any pattern desired. (Attached.
"Solid Soft Center" Cast Pile Steel. Steel Forgings made to order.

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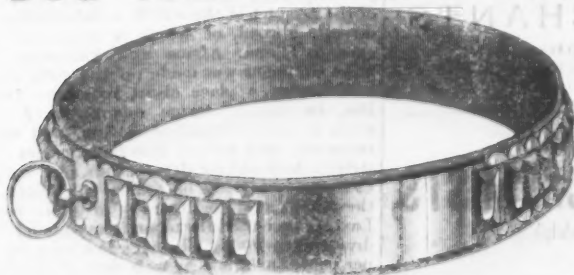
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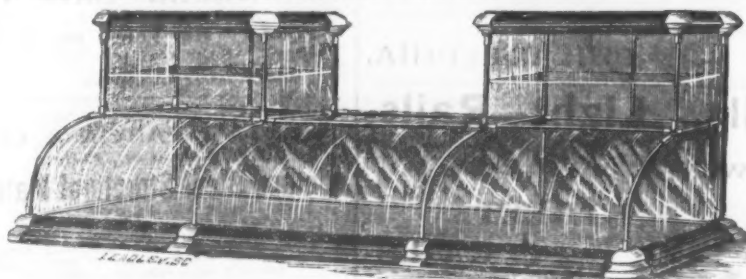
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It has no Seams or Solder in
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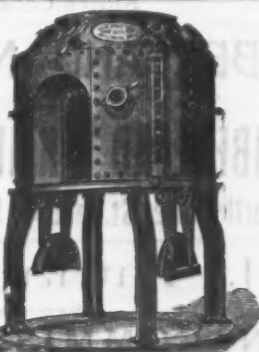
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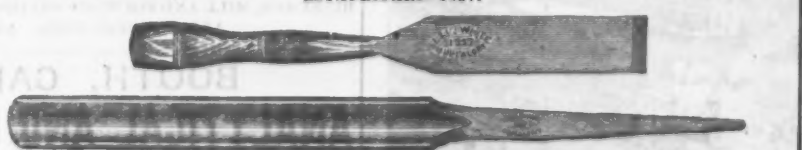
Made in six sizes, with capacity from one to fifteen tons per hour.
Adapted to all classes of work, for light or heavy castings, and ex-
cels all others in Economy of Fuel and Iron. Address

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Write for estimates and mention this paper.

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EDGE TOOLS & MACHINE KNIVES

Coopers', Carpenters' and Ship Tools, Cleavers, &c.

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BOILER TUBES,

Steam, Gas and Water Pipe, Oil
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AND

LINE PIPE.

Cotton Presses, Forgings, Rolling
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Menu of
FRANKLIN S. MILES,
Iron, Steel and German
SCREWS,
Brass.
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LOVELL ALL CLAMP

We Challenge the World to Produce its Equal.

Sample Pair sent postpaid on receipt of price.



PRICE, \$6.

Nickel Plated and

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CHAMPION

SINGLE BREACH-LOADING



SHOT GUN.

Top-Snap Action, Pistol Grip, Rebounding Lock, Patent
Fore-and-Aft Loading. For good workmanship, convenience of
manipulation, hard and close shooting, durability, and beauty
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PRICES: Plain Barrel, 12 bore, \$15.00; 10 bore, \$16.00.

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Special catalogue of Police Clubs, Hand Cuffs, Leg Irons,
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Price, \$7.50.

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Cartridges. Sent postpaid on receipt of price.

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Manufacturers of

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Windmill, Boiler Feed

Horizontal and Rotary

Pumps.

Hydraulic Rams, Iron

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of every description,

and other

HYDRAULIC MACHINERY.

TYRONE IRON CO.,

Works at Tyrone Forges, Blair Co., Penn.

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Blooms guaranteed and especially adapted
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Also Carriage Makers' Tools,

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JOHN MAXWELL,

MANUFACTURER OF PATENTED

BRASS, BRIGHT

TINNED WIRE

& JAPANNED

BIRD

CAGES.

The cheapest and

most saleable in

market.

Catalogues and

Price Lists furnished

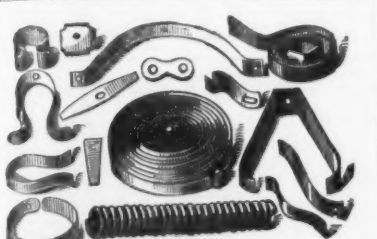
to the Trade.

247 & 249 Pearl St.,

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Full size of Band for Brass and Tinned Wire Cages.

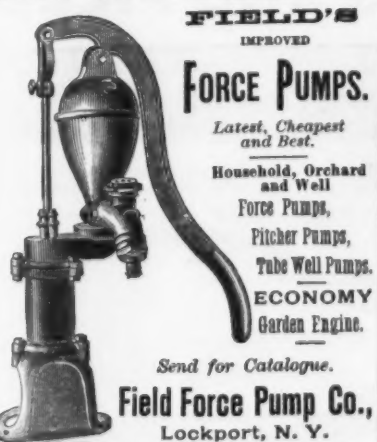
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Manufacturers of

Clock Springs and Small Springs

of every description, from best Cast Steel.

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**FIELD'S**

IMPROVED

FORCE PUMPS.

Latest, Cheapest

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Household, Orchard

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Force Pumps,

Pitcher Pumps,

Tub Well Pumps.

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Garden Engine.

Send for Catalogue.

Field Force Pump Co.,

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LAMP STOVE.

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Sells Quick and

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Pat. Nov. 14, 1876, & July 11, 1885. Others Pending.

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CORDAGE WORKS.

SOLID BRAIDED

Window Sash Cord.

SEND FOR SAMPLES.

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W. & B. DOUGLAS, Middletown, Conn.,

The Oldest and Most Extensive Manufacturers of

Pumps, Hydraulic Rams, Garden Engines,

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and Other Hydraulic Machines in the World.

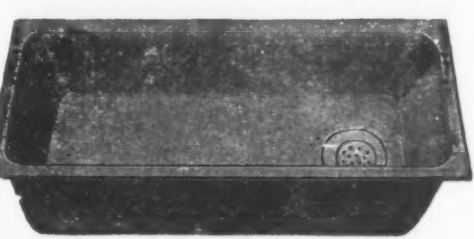
Fig. 120.



Fig. 209.



Fig. 70.

**Wrought Steel Sinks.**

One of the strong points of these sinks is the new coupling with which they are now supplied, and which is pronounced by all plumbers the best on the market. It is used with both lead and wrought-iron pipe; is a neat, reliable coupling, and is easily detached for the purpose of pumping out the pipe. The strainer and all parts of the coupling are tinned, and are furnished with all sinks without extra charge.

The fact of the great strength and durability of this sink, and that its merits are recognized by most competent judges is evident from the fact that leading houses which have been interested in the common article have taken up the Wrought Steel Sink. Twenty-five per cent. is saved in freight by purchasing Steel Sinks. Orders come from all parts of the United States, Canada, Europe and Australia.

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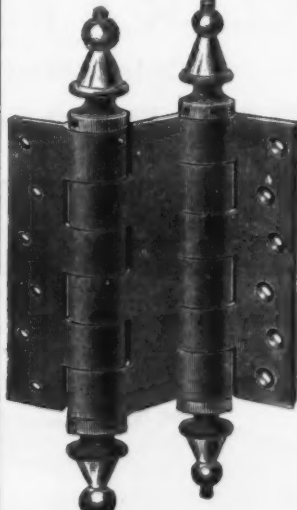
85 and 87 JOHN STREET, NEW YORK, and 197 LAKE STREET, CHICAGO, ILL.

UNION MANUFACTURING CO.,

MANUFACTURERS OF ALL STYLES

Plain and Ornamental Butts,

LOOSE PIN REVERSIBLE, CAST FAST AND LOOSE,



Drilled and Wire Jointed, Japanned, Figured Enam-

eled, Nickel Plated and Regl Bronze Butts.

Also a Full Line of

IRON AND BRASS PUMPS,

Cistern, Well and Force Pumps, Yard Drive Well,

Garden Engine and Steam Boiler Pumps, Hydraulic

Rams, &c., and all with the most modern improvements.

IRON SPIRAL SPRING HINGES.

We beg to call the attention of Architects, Builders, Dealers, and all interested parties, to our Spiral Spring Hinges, knowing it to be an effective and durable one, neat in appearance, easy to put on, and not liable to get out of order. The Springs are made from wire made expressly for us and for this particular purpose, with the view of great elasticity, durability and power. They produce a continuous pressure from the point where the door is wide open until it is closed, and then hold it perfectly in position. It has a solid pintal in connection with short hollow ones, causing little or no friction, the whole power of the Spring being exerted in swinging the door. It is fast Joint, and can be used for either right or left hand, allowing the dealer to carry less stock, and the builder will never get the wrong hand.

127 FINE CASTINGS A SPECIALTY.

New Britain, - Connecticut.

Warehouses: 103 Chambers Street, New York, and

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Illustrated Catalogue and Price List furnished

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THE E. & G. BROOKE IRON CO.,

BIRDSBORO, BERKS CO., PA.,

MANUFACTURERS OF

ANCHOR NAILS AND SPIKES. BRAND

Capacity, 1000 Nails per Day.

Made from their own Pig Iron, Insuring Regularity and Superiority in Quality.

ALSO

FOUNDRY AND FORGE PIG IRON,

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OLD DOMINION**CUT NAILS, BAR IRON.**

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IRON AND STEEL DROP FORGINGS

All shapes, small and large, including

GUN, PISTOL, WRENCH BARS, &c. ALSO, DIE SINKING. MANUFACTURERS ALSO

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MALLEABLE, FINE GRAY IRON AND STEEL CASTINGS made from patterns to

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of Carriage and Wagon Castings constantly on hand for the trade.



C. F. RICHARDSON, ATHOL, MASS., Manufacturer of

IRON LEVELS.**English Letter.**

(From Our Regular Correspondent.)

LONDON, April 5, 1886.

THE SITUATION

is very much the same in most respects as when I last addressed your readers. In Scotland there has been a sharp upward run in warrants, but the movement has been caused solely by the cornering of the bears, in whose ranks there have been three or four failures. Their stoppages have relieved the temporary pressure caused by their difficulties, and warrants are now no better than before. Although that is the case, it is a curious and lamentable circumstance that the spurt in Scotch warrants for one day only was hailed by some as a symptom of better trade and was made the excuse for advances in actual selling prices. As I have already stated, there is very little change to note in the condition of our principal metallurgical industries, but I have to record a departure of some importance on the question of restriction. You are aware that there have been discussions on this point for some time past in certain of the leading iron-making districts, which discussions have failed to yield any practical results, mainly owing to the refusal of certain of the largest smelters to take part in any scheme involving a limitation of the make. Since then the matter has been taken in hand by the British Iron Trade Association, which has its headquarters in London and is supposed to be more or less representative of the entire iron trade of Great Britain; indeed its membership does really include quite four-fifths of the leading furnace owners. That body called a meeting in London on Friday last, April 2, which meeting took place at the rooms of the association with closed doors and a great assumption of secrecy. No official report was permitted to appear, but as is most usual in such cases there was a process of subsequent "leakage," and we have a pretty accurate idea of what actually took place. It appears that almost or quite all the smelting districts were represented at the gathering, although Scotland, Cleveland and the West Coast makers were most numerous. There was an almost general opinion that it has become necessary, and not merely advisable, to restrict the output of pig iron, and the recommendation was that the restriction should be at least 25% from the existing rate of production, and that the plan should be pursued until trade revived or the surplus stocks now on hand had disappeared. Three or four dissentients objected to any project for limiting the make, and these firms will in all probability decline to be bound by any resolution for joint action in the matter. However, the meeting was adjourned for a fortnight, the secretary being instructed to communicate with all the iron smelters of the country in order to ascertain their views. For the moment, therefore, the question rests in abeyance, but it will certainly be much discussed in the interval. Many of those who are favorable to restriction fear that selfishness on the part of some and the inability of others to stop working without "spelling ruin," will effectually bar the adoption of the plan. At the same time it is urged that the attempt should be made in any case by all who favor the idea, so as to demonstrate the entire practicability of a combination among the ironmasters for the purpose indicated. There are on hand in different parts of the country quite 2,500,000 tons of pig iron, which in the aggregate constitutes a burden which presses heavily upon the iron markets of the whole world and interposes an impenetrable barrier to any rise in values.

The strikers in Belgium seem to have become somewhat less riotous, but the whole of the industries of that country are in a state of ferment, and it is evident that the trouble will not be rapidly healed. The destruction of property has been very considerable, and the diversion of orders is likely to do great and permanent harm to the iron, coal and glass industries of the country. It is alleged that the strikers have been promoted by German emissaries, but of this there is at present no proof whatever.

THE IRON MARKET

has continued flat and depressed throughout the week, the only exciting feature being an inflation of the Scotch warrant market, which forced prices for a day or two to a trifle over 41/2, and resulted in two failures. At closing prices were 39/11 3/4 ton. Shipments have been fairly good from the Clyde, but stocks are still on the increase. In Cleveland, No. 3 G.M.B. has rallied a little, sellers having obtained 30/6 for prompt cash and somewhat better terms for forward delivery. In view of the increasing stocks, the ironmasters of the district have given notice to their workmen that all present contracts will cease on April 17. Shipments have slightly improved, but they still leave much to be desired. On the West Coast the position remains unaltered. Mixed parcels can be bought as low as 42/6, but at this price the demand is quiet. In Staffordshire all-mine pigs are now quoted at 52/6 @ 55/; part mine at 40/ @ 45/; cinder pig at 30/ @ 32/6; but, as inquiries have been comparatively few, these rates have only nominally ruled. The Swedish market is still stagnant, without a single change either for better or for worse. Concerning the proposed restriction of output, it was suggested that a representative meeting of the entire trade should be held in London, and that meeting was held on April 2, at Westminster. There have been during the week more inquiries for British wire than has been the case for some weeks past, but no great amount of business has resulted. With regard to galvanized sheets, the condition of the trade is described as going from bad to worse; for not only are prices low, but the demand is lifeless. In certain quarters it is believed the depression cannot be much longer sustained, and, as a preliminary to giving up the struggle, it is to be expected that one or two works will in a very short time be closed down, ostensibly for a while, but really for good. In the finished departments throughout the country prices are now as last week. In the Wolverhampton district business has been practically deferred until after the

quarterly meetings. Old scrap is about the same as before, both as regards rates and demand. F. Pitts & Co., London, quote old D.H. iron rails, £2. 10/ @ £2. 12/6; No. 1 heavy wrought scrap, £2. 2/6; old iron boiler tubes, £2. 2/6; old leaf-spring steel, £2. 7/6 @ £2. 10/; old cast iron, £1. 18/6 @ £2, and old flange rails, £2. 7/6 @ £2. 10/; f.o.b. British ports. Swedish hammered bars, Indian assortments, are £9. 7/6 @ £9. 12/6; 3 x 3/4 short bars, £8. 10/ @ £8. 15/; 3 x 1/2, £8. 15/; Swedish rolled iron, £9, prompt, and £8. 6/3, summer shipments, and Swedish nail rods, £9. 5/ ton. Freight by ordinary steamers for pig iron from Glasgow to New York have been steady at 5/6. South Australia rates have been more or less unsteady, ranging from 7/6 to 17/6. Steel is in fair demand, and the works are generally, taking all circumstances into account, tolerably well employed. It is expected that some large orders for steel sleepers will be given out shortly, and the appearance of specifications for further bridge work in India is eagerly anticipated. Old leaf-spring steel is still quoted at 47/6 @ 50/6, f.o.b. London or other British port. Steel rails have been but little inquired for, chiefly owing to the uncertainty as to the break-up or otherwise of the international combination. But among the inquiries are some 8000 or 9000 tons for India. Next week the international meeting is to be held, at which, it is believed, the final decision will be taken as to the future combination. It is just possible, however, that the result will not be as is now generally anticipated.

SCOTCH PIG IRON

has been irregular in the open market since my last report, a sharp rise of about 1/2 in warrants being quickly followed by the failures of three or four "bear" operators for amounts ranging from £10,000 to some £60,000 each. There are now 96 furnaces in blast in Scotland, against 89 a year ago. In Connal's stores at Glasgow there are 719,224 tons (an increase of 778 tons last week), as against 591,955 tons this date last year. Shipments to date are 24,051 tons in arrears, and importations of Middlesboro' pig iron into Scotland are 20,245 tons behind, this year. Current rates are:

Deliverable alongside.	No. 1.	No. 3.
Gartsherrie, at Glasgow.....	45/	42/
Coltness, ".....	48/6	44/
Langloan, ".....	45/	42/6
Summerlee, ".....	47/6	42/6
Calder, ".....	47/6	41/6
Carnbroe, ".....	44/	41/6
Clyde, ".....	43/6	40/6
Monkland, ".....	41/	39/
Quarter, ".....	41/	39/
Govan, at Broomielaw.....	41/	39/
Shotts, at Leith.....	46/6	46/
Carron, at Grangemouth.....	48/6	45/6
Kinnell, at Bo'ness.....	43/6	42/6
Glenarnock, at Ardrossan.....	44/6	41/6
Eglington, ".....	40/6	37/6
Dalmellington, ".....	42/	40/

MIDDLESBORO' PIG IRON

is a shade firmer, in sympathy with Scotch, and despite the troubles among the Belgian consumers and the further large increase of stocks. For G.M.B., current rates, f.o.b. at makers' wharves in the Tees, are:

No 1 Foundry.....	33/3	Mottled.....	29/6
" 2 ".....	32/3	White.....	29/
" 3 ".....	30/9	Refined metal.....	47/
" 4 ".....	30/3	Kentledge.....	33/6
" 4 Forge.....	29/9	Cinder.....	30/

The quarterly return of Mr. Waterhouse, sworn accountant to the Northern Board of Arbitration is as under:

Gentlemen: Having collected from the firms and companies belonging to or associated for this purpose with your Board the returns of their sales of manufactured iron during the two months ending February 28 last, and having verified the same by an examination of their books, I certify the average net selling price 1/2 ton to have been £4. 14/9 1/2. Beneath is a statement of the different classes of iron sold, and the average net selling price of each:

Sales During the Two Months Ending February 28, 1886.

Description.	Weight invoiced.	Per-centage of total.	Average net selling price per ton.
Rails.....	Tons, cwt, qrs, lb. 556 8 2 18	1.25	£ 4 8 11.48
Plates.....	36,241 12 1 35	58.94	4 12 6.99
Bars.....	10,158 16 3 12	22.82	5 3 10.70
Angles.....	7,561 17 3 25	16.99	4 10 8.76
Total.....	44,518 15 3 22	100.00	4 14 9.64

The following are the figures for the previous two months:

Description.	Weight invoiced.	Per-centage of total.	Average net selling price per ton.
Rails.....	Tons, cwt, qrs, lb. 467 14 2 24	1.18	£ 4 9 5.60
Plates.....	24,536 19 3 21	57.02	4 13 6.55
Bars.....	11,154 16 1 15	25.13	5 1 5.13
Angles.....	6,819 0 0 8	15.92	4 10 2.78
Total.....	43,028 11 0 12	100.00	4 15 0.19

THE BLAST-FURNACE RETURNS

of the Ironmonger for the month show the following particulars:

General Summary.	
Total number of furnaces	Existing, March 27, 1886..... 868
In blast, March 27, 1886.....	416
Out of blast, March 27, 1886.....	452
In course of erection, March 27, 1886.....	7
On ordinary pig iron of various districts.....	394
On hematite pigs (about).....	89
On spiegelisen.....	14
On basic.....	9

Summary by Districts.

District.	Built.	Wholly idle.	Temporarily idle.	In blast.
Cumberland.....	53	30	2	21
Derbyshire and Nottingham.....	56	17	2	37
Durham and Northumberland.....	45	28	1	16
Gloucesters, Wilts, and Somerset.....	15	12	1	2
Lancashire.....	52	24	1	27
Lincolnshire.....	21	8	1	12
Northampton and Leicester.....	32	17	1	14
Shropshire.....	19	14	1	4
Staffordshire, North.....	40	15	3	22
Staffordshire, South.....	109	70	8	31
York, Cleveland.....	109	20	12	77
York, West Riding.....	40	17	9	14
Wales, North.....	10	5	1	4
Wales, South.....	121	68	21	32
Scotland.....	143	34	13	96
Totals.....	868	369	83	416

WEST COAST HEMATITES

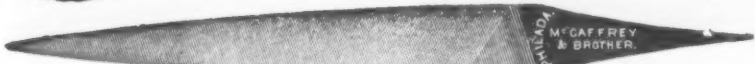
are a shade steadier, owing to the renewed talk of restriction, but there is really very

Paris, 1878.

**McCAFFREY & BRO.,**

PENNSYLVANIA FILE WORKS,

Philadelphia, Pa., U. S.



Manufacture and keep in stock a full line of **FILES** and **RASPS** only, for which we claim special advantages over the ordinary goods, and ask domestic and foreign buyers to allow us to compete for their trade.

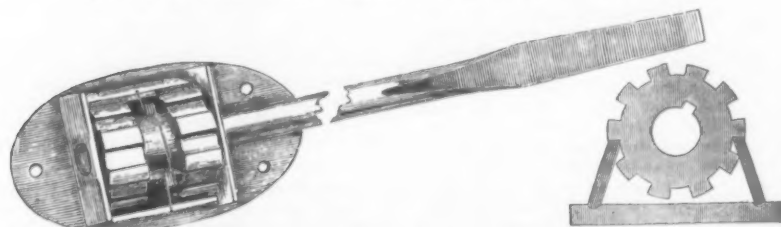
Superiority acknowledged wherever used, sold or exhibited.

GAY & PARSONS,

MANUFACTURERS OF THE

Double-Action Ratchet Screw Driver.

ONE OF THE VERY BEST TOOLS EVER INVENTED.



The above Cut shows the action or mechanism complete, also an end view of the Ratchet and Pawls, to which we wish particularly to call your attention, as in all ratchet movements, of whatever kind or nature, the **RATCHET** must be the principal and most important part employed.

It combines greater Strength,

Convenience and Durability than can be obtained in a common Driver.

FOR CIRCULARS AND PRICES, ADDRESS OUR AGENTS

JOHN H. GRAHAM & CO.,

113 Chambers Street, NEW YORK.

**LIGHTNING HAY KNIVES.**

WEYMOUTH'S PATENT.



This knife is the best in use for cutting down hay and straw in mow and stack, cutting fine feed from bales, cutting corn stalks for feed, cutting peat and ditching marshes.

The blade is best cast steel, spring temper, easily sharpened, and is giving universal satisfaction. A few moments' trial will show its merits, and parties once using it are unwilling to do without it. Its sales are fast increasing for export as well as home trade, and it seems destined to take the place of all other Hay Knives.

They are nicely packed in boxes, one dozen each of 30 pounds weight, suitable for shipping by land or water to any part of the world.

MANUFACTURED ONLY BY

HIRAM HOLT & CO., East Wilton, Franklin Co., Maine.

For sale by the Hardware trade generally.

CAUTION:

We are informed that various parties are infringing upon the widely known Letters Patent granted originally to George F. Weymouth, for an improved Hay knife.

The characteristic feature of the invention is a curved blade, provided with saw-tooth cutters, and furnished with suitable working handles. It is our purpose to prosecute all infringers of our patent, and we have already commenced one suit, which is nearly ready for hearing, and are about commencing suits against other parties.

All manufacturers are hereby warned of our rights, and the public are cautioned against purchasing any Hay "Saw Knives" which are not of our genuine manufacture.

HIRAM HOLT & CO.

EAST WILTON, May 26, 1884.

TACKS AND STAPLES
A COMPLETE LINE OF
Double Pointed & Steel Wire Tacks, Blind, Red Spring, Telephone & other Staples.
The Large Head 2 1/2 x 1 1/2 Full Weight.
Steel Wire Tacks Uniform, Dbl. Uniform
are put up either in 100 or 200 papers.
Outside of all combinations.
Send for Catalogue.

RIPLEY & BARTLETT, TACKS

MANUFACTURERS OF

Swedes and American Iron Tacks of All Kinds.

Having lately withdrawn from the combination, we are at liberty to make such terms and prices as we think expedient. Quality guaranteed the best in the market. Any variation from regular sizes and shapes made to order from samples.

TACKS & WIRE NAILSBOSTON SALESROOM,
70 Portland St.BALTIMORE SALESROOM,
73 German St.NEW YORK SALESROOM,
116 Chambers St.**AMERICAN TACK CO.,** Fairhaven, Mass.

For Superiority.



Nicholson
FILERS'
TOOLS.

File Cleaners.

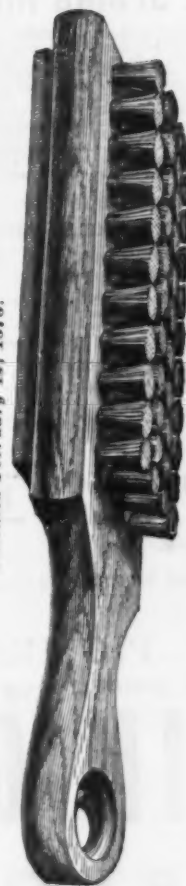
FILE CARD AND SCORER.

Patented February 12, 1878.



FILE BRUSH, CARD AND SCORER.

Patented February 12, 1878.



Every Mechanic will at once appreciate the advantages of these **TOOLS** over the rough contrivances of the workshop.

File Card and Scorer

is adapted for general use, and the

File Brush, Card and Scorer

for the finer grades of Files. The card clothing is firmly fastened to the handle. The scorer for removing the "pins" which clog the file teeth and scratch the work is always ready for use, but out of the way when not needed. The hole in the handle permits the easy removal of the scorer and the hanging up of the tool when not in use. The card and brush remove the filings much more effectively than the card alone.

Nicholson File Co.

PROVIDENCE, R. I.,

Sole Manufacturers.

BLACK DIAMOND FILE WORKS.**G. & H. BARNETT,**

21 to 43 RICHMOND STREET, - - - PHILADELPHIA.

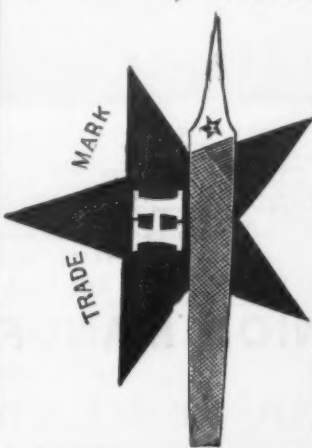
CHARLES B. PAUL, MANUFACTURER OF HAND CUT FILES,

Warranted Cast Steel.

187 Tenth St., Williamsburgh, N. Y.

All descriptions of Files made to order. Price List mailed on application.

Established 1863.

THRIFT FILE WORKS,
Manufacturers of all kinds of
FILES, RASPS.

CHRISTIAN HENNSLER,
428, 429, 430 & 434 Ireland St., PHILA., PA.
HERRING & SWEASEY, Agents in New York, 102 Chambers St.

McClellan
File Co.,

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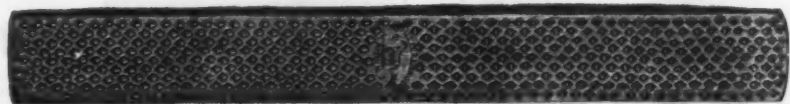
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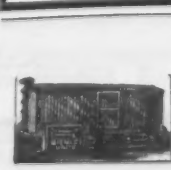
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Parts interchangeable
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STRUCTION.

EASY TO TAKE APART AND CLEAN. BEST OF WORKMAN-
 SHIP AND VERY CHEAP. Manufactured and sold by

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little change, and mixed lots are still about 42/6 @ 43/, while makers' brands are:

	No. 1.	No. 2.	No. 3.
Cleator	43/6	43/6	43/6
Lonsdale	43/6	43/6	43/6
West Cumberland	43/6	43/6	43/6
Lowther	43/6	43/6	43/6
Distington	43/6	43/6	43/6
Solway	43/6	43/6	43/6
Maryport	43/6	43/6	43/6
Harrington	43/6	43/6	43/6

TIN PLATES.

In London there is a better tone about the market. A fairly good business is reported to have been done, and some of the works are much better off for orders than they were a week or fortnight ago. I quote 13/3 @ 13/6 for IC cokes, f.o.b. Liverpool, though it is doubtful whether orders could be easily placed at the lowest figure. At Liverpool the tone generally continues to become firmer, and consequently there are no coke tins to be had under 13/6 IC, at which most quotations are firm up to 13/9 @ 14/ IC. There is more doing in Bessemer steel than in coke tins, and all parcels of plates that could be had at 13/6 IC, and even a little more, have been taken up for prompt shipment. There are still a few regular orders for the Siemens steel plates with coke finish to hand, but the quantities are not large, nor are they for delivery very far forward, 14/ IC being much easier obtainable for these now than it was at this figure. There is not much doing in charcoal tins or ternes. No good lines of ternes will be booked now until quarter-day. Practically it may be said that the prices for these are much enhanced, while higher prices are asked for coke tins and Bessemer as well as Siemens cokes.

THE HARDWARE TRADES.

In London the rough weather has interfered with business among retailers, but, allowing for that, there is not so much cause for complaint as at the commencement of March. That a more hopeful spirit obtains among shopkeepers is indicated by their placing orders for goods with greater freedom than for some time past. Still, matters are at the best unsatisfactory, money being hard to get in and prices cut finer than ever. At Birmingham general satisfaction is expressed in commercial circles at the close of a very unsatisfactory quarter, but it is not yet by any means clear that its successor will turn out any better. There is a feeling of relief, too, that the failures which were expected to herald the new quarter have been averted, and that in the solitary instance in which an old firm have been compelled to call their creditors together they have been able to show 20/ in the £1 if only time is granted. Orders are arriving slowly from the principal home markets for furnishing ironmongery and garden tools, cheapness in most cases being strongly insisted on. In the shipping department the Continental markets, and especially Germany, show more activity. At Sheffield the only branches which are making headway in the country trade are those connected with tools required in outdoor operations. There is great complaint in the cutlery, plate and general hardware trades of the exceeding poverty of the orders coming in, and the discouragement thus engendered is not lightened by the somewhat relaxed demand from export markets, which have for some time shown an improving tendency. American indents, which for the last three months have been larger and more numerous, have begun to taper off again, so far as table cutlery is concerned, and the colonial lines are also less promising than they were at the beginning of the year. In the spring-knife branch, however, the falling off in these directions is not so pronounced, and the leading houses are tolerably busy with export orders. Canadian indents for steel cutlery and files are well sustained, but the range of trade with the Dominion is steadily narrowing under the pressure of native competition and tariffs. In the other foreign markets the general position is not much changed. Business is desperately dull, and with Russia particularly the trade in saws and edge tools is suffering severely from the increased duties that were levied some time ago.

TRADE PUBLICATIONS.

The Trenton Iron Co.

A new catalogue and price list dated March, 1886, has been issued by the Trenton Iron Co., of Trenton, N. J. It is designed to take the place of all prior lists, and gives full information relating to their wire and wire specialties, wire-ropes fittings, hoisting-wheels, sheaves, &c. It is fully illustrated.

Elevating and Conveying Machinery.

The Webster & Comstock Mfg. Co., of Chicago, Ill., general machinists and manufacturers of elevating and conveying machinery for grain elevators, flour mills, sugar refineries, &c., have sent us a copy of their illustrated catalogue. It embraces 72 pages of description, price lists, tables of sizes and items of general interest, and will prove of great convenience to intending purchasers.

Gate-Valves.

D. Kennedy, 4 Gold street, New York, has issued a new price list relating to his double gate-valves for water, gas, steam, oil, ammonia, &c. It is fully illustrated and shows a number of modified forms of valves for different services. It contains also brief descriptions of the valves, price lists and tables of dimensions, and several pages of interesting matter relating to temperatures and volumes of steam at different pressures, dimensions, weights, &c., of wrought-iron welded pipe, weights and capacity of different standard gallons, &c.

Joshua Hendy Machine Works.

Six interesting catalogues issued by the Joshua Hendy Machine Works, of San Francisco, Cal., have just reached us. They are devoted to hydraulic mining machinery, ore concentrators and feeders, sawmill and laundry machinery, boilers, engines, pumps, &c. In the line of hydraulic mining machinery special attention is given to the well-known hydraulic giants, gravel elevators,

water lifters, sluice boxes, &c., and a mass of valuable information is also furnished on the general subjects of hydraulics, flow of water through pipes and nozzles, water-wheels and other similar matters. The sawmill machinery pamphlet shows single and double circular saws, cut-off saws, head blocks, automatic mill dogs, gang edgers, &c. The catalogue on boilers and engines shows a large number of different styles of pumps, engines, boilers and injectors, and describes also the Ballantine refrigerating machine, compression couplings, hangers, pulleys and other appliances. Two catalogues are devoted to ore concentrators and feeders, and contain interesting descriptions and illustrations. The catalogue on laundry machinery illustrates Chartrey's steam washing machine, and shows also polishing machines, tanks, and boiler and engine outfits.

The History of Trades Unions.

Trades unions are somewhere said to be a natural outgrowth of natural laws. However this may be, all such organizations have been until a very recent period plants of very slow growth. As long ago as the time of the first Edward, English peasants sought by united action to alleviate in some particulars the hardships of their lot, but their efforts, being generally directed to the redress of special grievances, ceased when success, and more frequently failure, was attained. It was not until the beginning of the eighteenth century that trades unions began to be organized for mutual aid and protection and to be permanent. The Watch-makers' Society in London was one of a few existing in 1703, but they were all equally illegal and abhorrent to the sentiment of the ruling classes, their members having no power or influence in the State. Halted by such conditions, little good was immediately accomplished, nearly every attempt, no matter in what direction, being a crime.

Still these associations increased in number and importance though the ban of illegality was not removed, the Friendly Society of Iron Founders, as late as 1810, being obliged to meet in dark nights on the wastes and moors in the highlands of the English midland counties, and to keep their archives buried in the peat. In those days strikes, the only remedies known, were generally accompanied by violence, which law undertook to meet with the harshest enactments, it being an offense punishable with death, in 1812, to destroy a loom.

The peace which followed Waterloo, stopping the enormous expenditures of a great war, brought about the inevitable reaction and threw out of work thousands of skilled operatives, reducing them to almost hopeless straits. All sorts of agitations for the relief of labor were conducted and remedies proposed. Naturally, trades unions availed themselves of the situation to procure legislation placing their organizations on a local and more satisfactory footing. The act of 1824 resulted, which declared combinations of workmen to be legal, but only for "improving wages and reducing the hours of labor," any combinations under it "in restraint of trade" being criminal, as before. Twenty-two years later, in 1846, an indictment 57 yards long was found against a large number of persons for conspiracy in getting up a strike, which rang the changes on all known or imaginable means relied upon to bring it about, and which resulted in very many convictions. It was decided in 1867 that trades unions having rules relating to strikes could hold no property even for benevolent or charitable purposes. This being unsatisfactory, a royal commission was appointed shortly after the Sheffield outrages to examine generally into labor troubles, and among the results of its investigations was the act of 1871, declaring trades unions legal organizations, and, what was all important, that the members thereof were not liable to indictment for conspiracy. Up to 15 years ago, therefore, it was a criminal offense in Great Britain for workmen to unite together for peaceable action in furtherance of a strike.

All legal barriers now being removed, a rapid and marvelous increase in the organization, influence and resources of labor began, so that any statistics a few years old are a long way behind existing facts. At the general conference of 1883 there were 173 delegates from 135 bodies, representing 561,091 unionists. The five largest unions doubled in the 16 years previous, and so rapid has been the increase since that the number now in the United Kingdom is supposed to be 1,000,000. Their funds, in spite of heavy losses from strikes, are constantly increasing. The cash balance of the five largest unions—engineers, iron foundries, carpenters, tailors and stone masons—was in 1882 £360,000, and their income for the same year was £330,000. The seven largest societies expended in 1881 for sickness, death, superannuations, accidents, funerals, &c., £220,095. Labor organizations in the United States and Canada have had very much the same history for the same period of time as their British brethren, though there never has been the same legal hostility. Such was the construction of the law in several States, however, that it was thought advisable to procure statutes declaring that combinations to encourage strikes were not criminal conspiracies, provided the particular act complained of, if done by one person, was not a crime. Laws of this character were passed in Maryland in 1884, New Jersey in 1883 and New York in 1882. Laws expressly authorizing the organization of trades unions were passed in Maryland in 1884, and in Michigan in 1885.

The earliest labor combinations in this country were modeled after those in existence in England. Each trade or craft had its own union and worked independently not only of the outside world, but of unions of other trades as well. These unions still continue under the name of the Federation of Trades, and a national convention meets every year, composed of delegates from each union. But it was long ago discovered that the general organization was not strong enough for defensive, even without considering the necessity for offensive, operations. In the event of any difficulty with employers it was often found that the union in trouble was left to its own resources without any

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GENERAL HARDWARE.

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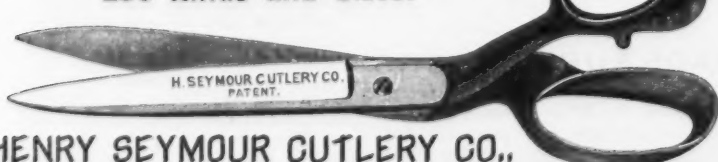
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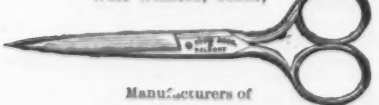
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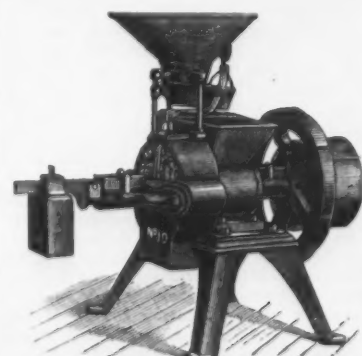
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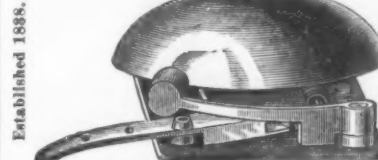
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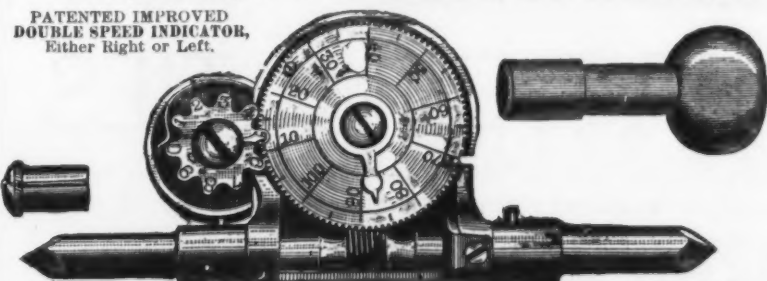
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The serrated jaws of the Wrench are interchangeable; that is, the same serrated plate may be used for either the stationary or sliding jaw, so that if one plate is broken another can be furnished adapted to either jaw with out express designation. The slides, nuts and various parts are also interchangeable, thus easily repairing the Wrench at very small expense, and with as perfect practicability for further use as when the Wrench was new. For Circulars and Price List, address

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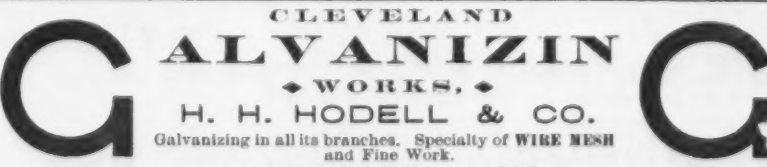
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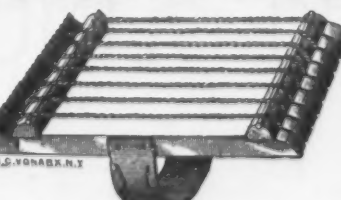
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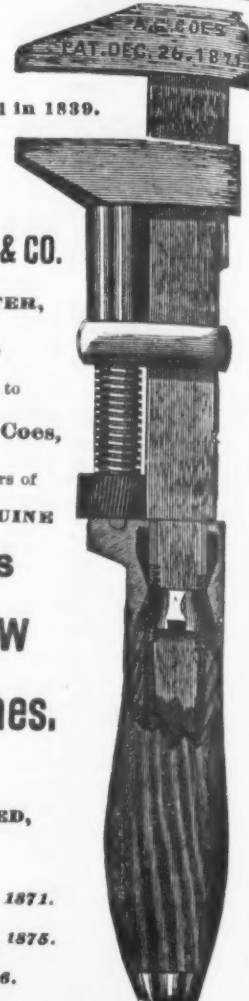
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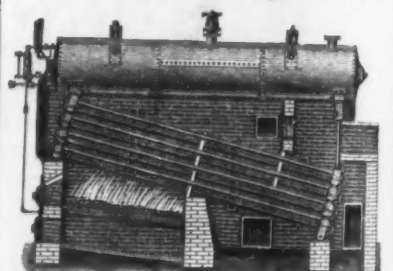
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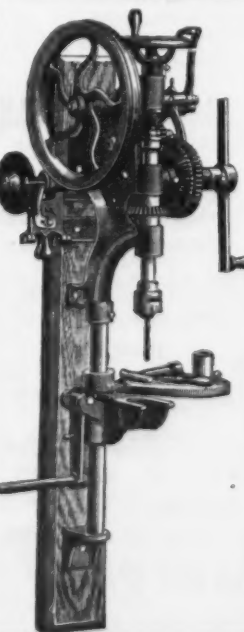
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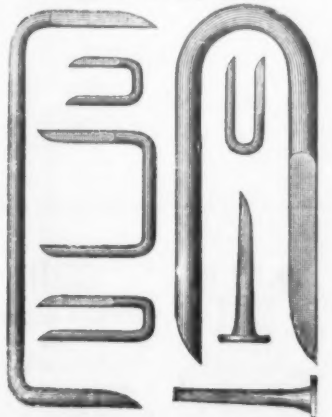
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help from other trades or crafts. The mischief was well understood long before a practical man was found to apply a remedy. The old system was much like that in force under the Articles of Confederation, in which each State heard the suggestions of Congress and then did as it pleased. Evidently a new union was necessary, with a central head and well-defined executive powers. Uriah Stephens, a Philadelphia tailor, with six others of like occupation, met at his invitation in 1860 and formulated a plan of thorough union of mechanics, laborers, tradesmen and others of like sympathies in an organization to be known as the Knights of Labor. Originally so quiet a society as to compel its members to keep secret even their membership, it has only been within the last few years that its existence has been admitted, and even now reticence is the rule as to those matters about which the public is most concerned—its strength and pecuniary resources.

Foreign Markets.

FRANCE.
PARIS, April 4, 1886.—*Metals.*—Since our last report the market has been steady at ensuing quotations in francs per 100 kg.: Copper, Chili Bars, 108.75 @ 112.50; Ingots and Slabs, 116.25; Best Selected, 118.75; Pure Croco. Ore, 131.50. Tin, Banca, 355.50; Siam, 251.25; Straits, 250; Australian, 251, and English, 248.75. Lead, 32.25 @ 33, and Spelter, 39 @ 39.50. Iron.—Business in the iron line remains about as dull as ever, deplorably so, and prices cannot be made to rise above 41.50 @ 100 kg. Flooring, and 12.50 francs. Merchant. Fortunately we are now on the eve of the building season, with a fair amount of work to be done in this city, promising all the greater activity as the season has been delayed by the prolonged and severe winter we are just emerging from. Meanwhile we are again assured that the contemplated great public works will soon be taken in hand, the amount to be spent in and about the city alone being 250,000,000 francs. The exhibition of 1889 has also been decided on, and as for the Metropolitan Railway, we are told that it will in part be an elevated one. The Iron-Ore movement first two months has been as under:

Import.	1886.	1885.	1884.
Tons.	Tons.	Tons.	Tons.
From Belgium.....	5,540	19,190	29,263
From Germany.....	49,073	60,747	70,432
From Spain.....	58,241	62,368	79,157
From Italy.....	1,645	508	15,714
From Algeria.....	17,160	4,788	27,120
From other countries.....	5,897	3,128	3,871
Total.....	138,096	150,623	225,647

Re-Export.	1886.	1885.	1884.
Tons.	Tons.	Tons.	Tons.
To Belgium.....	76	840	2,080
To Germany.....	3,310	8,357	11,042
To other countries.....	1,373	350	3,450
Total.....	4,059	9,447	17,172

—Moniteur des Interêts Matériels

BELGIUM.
BRUSSELS, April 8, 1886.—*Iron.*—Although order has been restored and the labor troubles have been overcome, the effect for the time being in Belgian iron industry has been most deplorable. Our makers have to struggle hard to be able to compete in the world's iron markets with other Continental nations and England. We cannot weather the present poor times except we can count on paying low wages and we perceive that at Middelburg, for example, wages have also been reduced 74%. The present critical state of iron industry, however, prevails as much in France and Germany as it does in this country, and we are all aware that workmen there are no better off. There has been no change in iron prices in the meantime; the works continuing in operation will receive all current orders and ask full prices in consequence. Thus Thy-le-Château is executing orders for Brazil for iron sleepers and another Belgian works has received orders for beams for England. If the spring trade were bricker than it is, the late disturbance would have been felt still more; as it is, by the middle of the month all works will probably have started again. It is to be hoped that the summer months may indemnify us for the interruption.—*Moniteur Industriel*

HOLLAND.
ROTTERDAM, April 4, 1886.—*Tin.*—Since the late sale a better demand has sprung up for Tin, Banca, spot, selling at 55.50, and Billiton, spot, and April, at 56.25. The following statement shows the position of Banca Tin in Holland on March 31, from the official returns published by the Dutch Trading Co.:

	1886.	1885.	1884.
Import in March.....	7,012	17,982	11,239
Total three months.....	29,273	60,381	27,069
Deliveries in March.....	11,300	8,874	9,000
Total three months.....	34,084	23,424	28,994
Stock second-hand.....	24,480	57,491	43,063
Unsold stock.....	38,360	106,370	75,000
Total stock.....	92,844	163,791	118,063
Afloat.....	Piculs 10,400	1,700	5,270

Statement of Billiton.

	1886.	1885.	1884.
Import in March.....	2,000	14,894	5,133
Total three months.....	14,690	26,594	17,933
Deliveries in March.....	5,011	5,859	9,499
Total three months.....	21,480	18,959	29,999
Stock.....	9,714	49,435	40,530
Afloat.....	Piculs 15,000	13,000	14,500

Quotation, March 31.

	1886.	1885.	1884.
Billiton 54 1/2 fl.	48 fl.	52 1/2 fl.	51 fl.
Billiton 56 fl.	47 1/2 fl.	51 fl.	51 fl.

Export of Tin from Holland.

	1885.	1884.	1883.
To Germany.....	Tons 466	410	320
England.....	55	69	72
Belgium.....	41	17	49
Hamburg.....	29	25	49
The United States.....	43	52	31
Other countries.....	119	19	57
Total.....	755	592	627

—Kock & Vlierboom.

SPAIN.
BILBOA, April 4, 1886.—*Iron.*—There is not much animation in iron ore; shipments nevertheless continue steady while the fine weather lasts. Campanil Ore meanwhile commands 6/8 @ 6/9, and Superior Rubio 6/4 @ 6/5. Freight is tending downward. Ore shipments so far 780,077, against 808,894 same time last year.—*Revista Minera.*

GERMANY.
HAMBURG, April 8, 1886.—*Iron.*—Our Dortmund correspondent reports a weak market in iron ore and a dull one in pig iron in spite of reduced production during the first two months of the year of 569,250 tons, against 616,738 same time in 1885. The fact is that the spring trade is a sore disappointment in Germany in the iron branch, and that with the apathy existing on all hands consumers only buy from one month to another, instead of buying for the next quarter. Only Thomas and Spiegel have been sustained; all other sorts have been dropping. As for the rolling mills, there is a little more doing in a few branches, but on the whole the situation is unsatisfactory, owing to competition, which causes growing weakness. Merchant selling down all the way to 93 marks per ton. There has been an increase in the demand for coarse sheets; the mills are busier and prices are looking up. Activity for export in the wire branch has slackened, causing the tendency to be downward once more. Steel industry forms an

exception, and the works turning out railroad material have received orders enough to keep them busy to the end of the current quarter. Steel Rails are worth 135 marks and iron sleepers 128 marks per ton. Dullness is reported by the car makers, machinists, foundrymen, bridge builders and steam boiler makers. *Metals.*—Spelter is firmer upon the assertion that instead of being able to dispose of 1,000,000 cwt. for sale abroad Upper Silesia will not have as much as a third of that quantity.—*Borsenhalle.*

AUSTRIA.
VIENNA, April 4, 1886.—*Iron.*—The condition of the iron market in Austria shows no favorable change; all attempts at getting on foot a suitable common understanding about curtailed production have so far led to no result. The Alpine Co. are said to have received more orders than last year at this time, but this is not the case, so far as we are aware, with other works. At the same time the Alpine Co. pass their dividend for 1885; this being the leading concern in the line, it may be inferred that other works have not been faring better. In our own iron market there has been a slightly brisker demand for a few articles in the iron line, but on the whole we are no better off than the other centers of distribution. We quote Fig. 48 @ 54; Merchant, 117.80 @ 122.50; Sheets, 140 @ 175, and Beams, 100 @ 105. *Metals.*—Spelter is better. We quote Copper, 55 @ 68; Tin, 121 @ 124; Spelter, 38.75 @ 39.25; Lead, 15.50 @ 17.75; Antimony, 40 @ 41, and Quicksilver, 315 florins.—*Austrian Trade Journal.*

CHILE.
VALPARAISO, February 19, 1886.—*Copper.*—Prices have been fluctuating between \$15.50 and \$15.80 per quintal, closing at the outside figure, equal, with 2 1/2 freight to Liverpool and 254d. exchange, to 427 1/2. *Nitrates.*—The demand for the United States seems to be satisfied for the moment, and as the European markets are dull, comparatively little has transpired. Freight being higher, producers are more willing sellers, but the scarcity of ships' room is an impediment to shipment. Sales, 310,000 quintals at \$3.30 @ \$3.35, closing at \$3.17 1/2, which, with 25 1/2 freight and 254d. exchange, equals 9 1/2 in England.

January Shipments.

	1881.	1885.	1886.
Quintals.	Quintals.	Quintals.	Quintals.
To the North of Europe.....	425,209	551,427	363,029
To the Mediterranean.....	23,238
To the United States on the Atlantic.....	221,884	166,330	23,300
To the United States on the Pacific.....	10,913	17,586	36,900
Total.....	681,244	735,343	423,129

Charters amount to 11,500 tons for Europe and 2400 for the Atlantic States. Coal.—Nearly all the Coal that was for sale has been taken, but consumers are so well stocked at present that it will not be an easy matter to sell the next cargoes arriving. We quote: West Hartley, 31 @ 21/8; Orel, 18; Australian, 8/8. Exchange—Declined from 254d. to 251, 10 days' sight on London.—*Weber & Co.*

EAST INDIES.
COLOMBO, March 1, 1886.—*Plumbago.*—There has been no further change. We quote at the close, cost and freight per ton to London, with 5/ additional if per steamer: Large Lumps, £14 10/; Ordinary, £13; Chips, £10, and Dust, £7 5/.—*Volkart Brothers.*

NEW PUBLICATIONS.

THE COAL TRADE—1886. By F. E. Seward, Editor of Coal Trade Journal, New York.

Mr. Seward's thirteenth volume, entitled the "Coal Trade" has just been issued. It is a well-known summary of the statistics of the trade, a good many of which have been obtained by Mr. Seward's individual efforts. Among the latter is the following estimate of the production of coal in the United States during the past year, which will be of interest, since it differs very materially from the figures put forward by others:

	1884.	1885.
Alabama.....	2,000,000	2,225,000
Arkansas.....	150,000	175,000
California.....	300,000	150,000
Colorado.....	1,300,000	1,350,000
Dakota.....	50,000	75,000
Georgia.....	30,000	30,000
Idaho.....	30,000	40,000
Illinois.....	10,101,006	9,791,874
Indiana.....	2,260,000	2,375,000
Indiana Territory.....	4,000	500,000
Iowa.....	3,348,458	2,585,737
Kansas.....	1,100,000	1,300,000
Kentucky.....	1,570,000	1,700,000
Maryland.....	2,469,051	2,462,485
Michigan.....	135,000	130,000
Missouri.....	2,640,000	2,750,000
Montana.....	50,000	75,000
New Mexico.....	230,557	306,207
Ohio.....	9,000,000	9,000,000
Oregon.....	60,000	100,000
Pennsylvania anthracite.....	30,718,293	31,625,529
Pennsylvania bituminous.....	25,000,000	25,000,000
Tennessee.....	1,300,000	1,440,567
Texas.....	125,000	175,000
Utah.....	250,000	250,000
Virginia.....	300,000	650,000
Washington Territory.....	380,698	410,697
West Virginia.....	3,000,000	3,483,457
Wyoming.....	1,000,000	900,000
Total.....	99,543,062	102,224,553

Mr. Seward's book will be valuable to those who at any time have occasion to use a work of reference in the statistics of the coal trade. It is the only one of its kind.

TABLES FOR CALCULATING THE CUBIC CONTENTS OF EXCAVATIONS AND EMBANKMENTS. By John R. Hudson, C. E. Size 5 1/2 x 9 1/2 inches, 72 pages. Published by John Wiley & Sons. Price, \$1.

The second edition of Hudson's tables, which was issued a short time ago, has been considerably enlarged. The tables, as the title indicates, are designed for calculating the cubic contents of excavations and embankments by an improved method of diagonals and side triangles, and will be found useful in many respects. Irregular cross-sections can be rapidly worked out by using the tables of side triangles, and, as nearly all the work is done by these, and they have been calculated with great care, the chance of error is greatly reduced.

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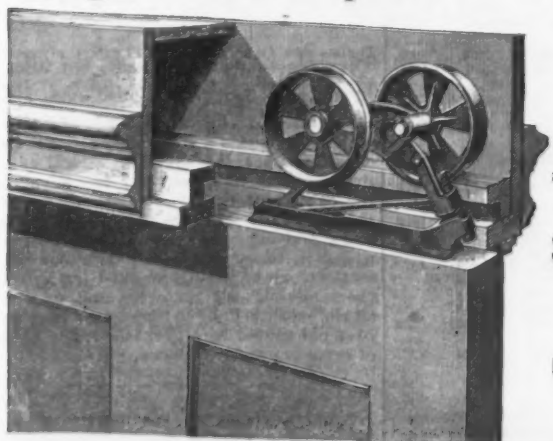
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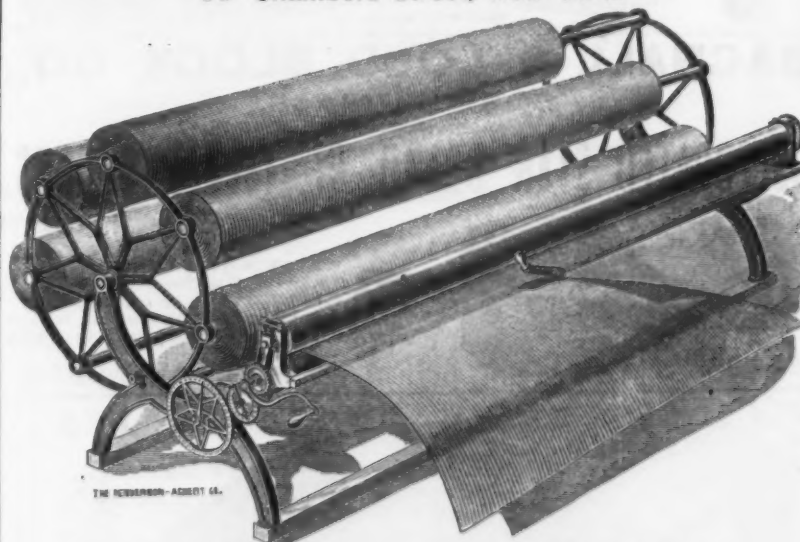
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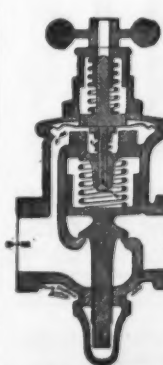
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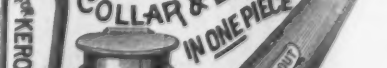
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The Western Nail Manufacturers' Reaffirm their Position.

The annual meeting of the Western Nail Association was held on the 14th at Wheeling. In regard to prices the following resolution was submitted and adopted:

Resolved, That we reaffirm our adherence to the scale of prices known as the manufacturers' scale, and assure the workmen who have accepted it and are now working under it of our entire satisfaction with the result of what was considered a doubtful experiment, and pledge ourselves to abide by all obligations assumed in their behalf.

Officers were elected as follows: President, J. N. Vance, of Wheeling; first vice-president, C. L. Fitzhugh, of Pittsburgh; second vice-president, W. H. Wallace, of Steubenville, Ohio; secretary and treasurer, George Wise, of Wheeling. An address to the public was submitted by the Conference Committee and was approved. In the address the manufacturers say:

There are two sides to the controversy now existing between the master nailers, heaters and rollers of America and the Western Nail Association. The Executive Board of the former have given one side of this controversy. We present the other. When it was ascertained more than a year ago that the Amalgamated Association of Iron and Steel Workers, of which the nailers were the members, would accept a reduction of 10 per cent. in their scale of wages, at their meeting on the 1st of June last the nailers withdrew and formed an association under the name of United Nailers of America, to which association have since been added the heaters and rollers. It was obvious to the nail manufacturers that the object of that withdrawal was to avoid making the reduction that the Amalgamated Association was disposed to accept, and subsequently did accept, and to compel the manufacturers to pay the price that had heretofore obtained—more than 40 per cent. than was paid for similar work east of the mountains. On the 8th day of July the manufacturers gave notice that if the nailers did not accept the 17-cent scale before noon of the 11th their jobs would be vacated and the machines offered to any other persons who would accept that price. The nailers removed their tools on the 22d day of July, and the manufacturers resolved to offer the machines to the nail feeders and others. One mill after another soon began to operate their machines with new men, until what the nailers believed to be an impossibility—that new men could be taught to become competent nailers in a few months—began to take such shape and form that the nailers began to fear that their calling was in danger. On the 6th of November—more than five months after the Nail Association had presented their scale and notified them of the appointment of their conference committee, the nailers advised an Executive Committee and were willing to meet the manufacturers. This Executive Committee had been appointed by the nailers at their July meeting, but they were not willing to meet the manufacturers until November. By this time the manufacturers had committed themselves to the policy of employing new men, and had entered into such arrangements with them that they did not deem it advisable to entertain any proposition that would interfere with those obligations, and they so informed the nailers. At the late conference the manufacturers stated that the heating furnaces had been changed in many of the mills, and that no uniform prices could be fixed for heating that would be equitable and just, and that this question must necessarily be referred to the several mills and their workmen for settlement, according to the kind of furnaces in use. To this the nailers' committee strenuously objected, and, when the manufacturers' committee refused to recede from their position, broke up the conference. This is a brief statement of the matter in controversy, which, we think, will not be called in question. We do not deem it necessary to reply to the hard names and denunciations in which the Executive Board of the nailers, rollers and heaters have so freely indulged, knowing that abuse and defamation are not arguments, and that while such things may excite they do not convince.

Latest Legal Decisions.

RESPONSIBILITY FOR EMPLOYEES.

B. sued S. to recover damages for the death of her husband, whose life was lost through the negligence of A., a foreman employed by S., who was a stevedore, to unload a vessel. A stationary steam engine was used, with an engineer and 13 men. In this case—Brown vs. Sennet—the trial court charged the jury that S. was not liable, as the deceased and A. were fellow servants, and by law assumed the risks resulting from each other's negligence, and they found for the defendant. But the Supreme Court of California reversed the judgment, on the ground that the foreman took the place of the master. Judge McKee, in the opinion said: "Undoubtedly the foreman and the other men engaged in discharging the cargo were all working for the defendant, and were, therefore, his employees, and the relation of master and servant existed between them. But the case also shows that the defendant abdicated the control and management of the entire work to the foreman, and gave him full discretion to supervise and control it. 'I was,' testified the foreman, 'foreman of the job, and superintended it for him; I employed the men, and he paid us all.' Under that delegated power the foreman was, therefore, in the performance of the 'job' in the place of the master. That being the case, the defendant would be liable for any neglect of the foreman in the performance of the work to the same extent that he would be liable for his own neglect if he had supervised and controlled it. The general rule upon this subject is: One to whom an employer commits the entire charge of the business, with power to choose his own assistants, and to control or discharge them as freely and fully as the principal himself would, is not a fellow-servant with those employed; under him, and the master is

answerable to all the under servants for the negligence of such managing assistant, either in his personal conduct within the scope of his employment or in his selection of other servants. Such at least appears to us to be the rule sanctioned by the weight of authority and by sound reason, though it must be admitted this rule is not everywhere acknowledged. The fact that the master exercised due care in the selection of the person to whom he delegated his power and supervision of the work does not affect the rule which holds him responsible to his servants for the manner in which the work is performed, and, if in the performance death or injury results to a servant from the wrongful act or negligence of the person who is supervising and controlling the performance in the place of the master, the master is liable, and the rule exempting him from liability for such injuries caused by the negligence of a fellow-servant has no application."

TELEGRAPH COMPANIES—FAILURE TO SEND DISPATCH—LOSS OF LABOR CONTRACT.

M., through an agent, made a contract to work for a manufacturer, and the agent, who was to advise M. when he had completed the agreement, was required by M. to telegraph the result to him. This he did, but the company neglected to send the dispatch, and M. sued them for the loss he suffered by losing the contract, as another firm was employed in his place, as he did not report for duty. The company denied that it was liable except for nominal damages, and the Supreme Judicial Court of Maine, in this case—Merrill vs. Western Union Telegraph Co.—so decided. Judge Haskell, in the opinion, said: "The contract was defeasible at the will of either party. How, then, can any substantial damage be measured? Had the engagement to employ the plaintiff been for a stipulated and definite period, not over one year, as it was not in writing, the plaintiff would have a right to demand damages which could be definitely measured or assessed. He would have then been entitled to enjoy the fruit of his labor during the time of his engagement, but this is an ordinary labor contract at a per diem rate, which could be broken at any time. The plaintiff must show that he suffered damages which resulted from the negligence of the defendant or he cannot recover."

RAILROAD COMMUTING TICKETS—DUTY TO SELL.

A. lived along the line of a railroad which sold from his station commutation tickets, one of which he had. But one day he left this ticket at home, and when the conductor came to him he explained this and offered him a regular trip ticket on condition that he should not punch it. The conductor declined to do this and A. refused to pay fare. There was no further difficulty at the time, but when A. applied for the next commuting ticket the road refused to sell it to him. A. then applied for a writ of mandamus to compel the company to issue to him his ticket as it issued like tickets to others. In this case—Atwater vs. Delaware, Lackawanna and Western Railroad Co.—the Supreme Court of New Jersey granted the writ. Judge Depue, in the opinion, said: "A company is under no obligation to establish commutation rates for a particular locality, but, when it has established such rates and commutation tickets are sold thereat to the public, the refusal of such a ticket to a particular individual, under the same circumstances and upon the same conditions as such tickets are sold to the rest of the public, is an unjust discrimination against him and a violation of the principle of equality which the company are bound to observe in the conduct of their business. There is not a perceptible shade of difference between the denial of a commutation ticket under such circumstances and the refusal to sell the same individual an ordinary ticket at the customary rate and demanding of him for transportation the utmost price allowed in the company's charter in excess of the usual price at which such tickets are sold to the public, and such a denial is a discrimination clearly. The conduct of the relator in this case was reprehensible. He knew and should have respected the duty of the employees on the train in the enforcement of the company's sales. By his conduct he made himself liable to ejection from the train, and it may be to the forfeiture of the commutation ticket he then held. But we think that this misconduct did not justify the company in excluding him thereafter from the privilege in which as a member of the community he was entitled to participate in common with others of the public. Such a measure of punitive justice had not been granted by any statute, and, if inflicted by any regulation of the company, which it was not, would be an unreasonable exercise of the company's power to make rules and regulations for the government of passengers. The relator's right to proceed by mandamus is disputed. It is insisted that his only remedy is by action for damage. It is undisputed that mandamus is an appropriate remedy for withholding a right such as the relator had in this instance, and that the court in its discretion will award the writ if justified by the circumstances."

MANUFACTURES FOR EXPORTATION.

A large number of spruce logs were brought down in the State of New Hampshire preparatory to being carried to the State of Maine, to be manufactured and sold. They had not been shipped to Maine, neither had they been entered for transportation with any carrier to be taken to Maine. The authorities of the town where they were lying taxed them, and the tax was supported by the Supreme Court of New Hampshire. The case—Coe vs. Town of Errol—was carried to the Supreme Court of the United States, where the tax was still further sustained. Mr. Justice Bradley, in the opinion, said: "1. The point that these logs were not taxable because they were the property of non-residents, and were taxable elsewhere, is not tenable. They can be assessed as the property of a resident can be. 2. Unless manufactures are in the course of exportation by being actually in transit, or are to be delivered into the hands of a common carrier as freight, they are not protected by the common laws of the Federal Constitution."

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AND METALLURGICAL REVIEW.

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The Impending Collapse of Organized Labor.

The present tendencies of the labor agitation, especially such as are traceable to the influence of the Knights of Labor, are peculiarly interesting and instructive. The patience of the American people is being tested to the limit of its endurance. As a people we are inclined to be optimists in all matters affecting the public welfare. We seem to assume that every evil will in time work out its own cure, and that, however dangerous the causes at work, the good sense of the American nation will triumph in the end and all will be well. We are even disposed to believe that the more violent the activity of turbulent elements, the sooner will the remedy be found. This is well enough if we do not carry it too far, and the great national uprising of 1860 warrants the belief that toleration will not be carried beyond the point of safety.

In labor matters we are very near that point at present. Strikes and boycotts, with their attendant evils of violence and the cruel oppression of hundreds of thousands of persons in no way to blame for the misfortunes they are suffering, have been regarded with uneasiness, but with entire confidence that before long everything would come right. But it grows steadily worse instead of better, and public opinion is being aroused in a way which threatens the destruction of labor organizations. The leaders and organizers of the workmen's associations are becoming much too dictatorial and arbitrary. They are arrogating to themselves powers which are superior to those of Government. They are setting the laws at defiance, terrorizing the civil authorities, denouncing the courts and imperiling all forms of property. The workmen forget that the interests of 60,000,000 of people cannot be made subordinate to those of 500,000; that interstate commerce cannot be stopped until an order without legal existence or responsibility shall secure "recognition;" that citizens who do not wish to join unions must not be compelled to surrender their independence, and that the industry and trade of half the continent shall not be paralyzed

to enable a few violent men to accomplish their purposes. Organized labor has sown the wind and is beginning to reap the whirlwind. Public opinion is rapidly taking the shape of a demand that the machinery of the law shall be set in motion, and that even workmen shall be required to respect the rights of others.

The events of the past few months are well calculated to discourage those who have felt a broadly humanitarian interest in the welfare of the wage-earning classes. The oppression of labor by capital in the darkest days of the middle ages was not comparable to the oppression of labor by labor in this enlightened era of liberty and law. No tyranny was ever so absolute and irresistible as that which organized labor seeks to exercise over those who work without first paying it tribute. This cannot last. The result must inevitably be the utter defeat of organized labor and a rude awakening of sentimental philanthropists from their dream of a social progress to be worked out through their agency. The order of the Knights of Labor, of which so much was hoped, is a disappointment. Instead of a great conservative force, it is becoming a dangerous public nuisance, with no use for power save to abuse it. Mr. Powderly, who put himself among statesmen by his circular letter of a few weeks ago, has stepped down from the pinnacle of fame and taken his place alongside of such rattle-brained demagogues as Martin Irons. His order to support the Southwestern strikers, right or wrong, marks him as a man unfit to lead the great movement at the head of which he stands. His letter to Mr. Gould marks him as weak and ignorant of everything a great leader should know. His power for usefulness is gone forever, and no man who is likely to succeed him can replace the order on the firm basis of its original purpose. Everything now warrants the belief that it will go to pieces, and that its reorganization will be impossible.

Meanwhile trade suffers. A feeling of uncertainty is everywhere felt and expressed. The wheels of industry are running slower and slower, and labor is losing little by little all it has gained by the struggles of half a year. The evil is beginning to right itself, but public opinion will accelerate the cure by heroic remedies if the provocation continues.

Report of the English Commission on Accidents in Mines.

Accidents in mines have always strongly appealed to sympathy through the heart-rending details of the calamities by which large numbers of men have lost their lives by one explosion. Public opinion has been expressed in unmistakable terms on the duty of mine owners to take every step to insure the safety of their workings, and on the necessity of Government supervision in having precautionary measures carried into effect. The result has been that the Government of every country in which there are extensive coal mining operations in Europe has appointed one or a number of commissions to investigate the causes of accidents, with a view to adopting regulations to lessen the dangers to underground work. The French commission has put its labors on record in a series of volumes, compiled by Goupillière, Aguilon and others, and yet their researches were flatly contradicted by Belgian experts called upon to deal with the same problem. Lately the Germans have gone at the study of the question in their deliberate, thorough manner, and even in this early stage of their labors have distinguished themselves by the elaborate series of experiments on the influence of coal-dust in colliery fire-damp explosions at Saarbrücken. The Austrians are following in their wake.

During the past few years a commission of English scientists and mining engineers appointed by the House of Commons has been slowly accumulating evidence, largely by original researches, the scope and results of which reached the public in a fragmentary way. At last the long-expected final report has been submitted, and, while it goes over much ground previously traversed by others, it does in some important points take a somewhat unexpected position. It is signed by scientists like John Tyndall and Sir Frederick Abel, by Prof. Warrington W. Smyth, of the London School of Mines; Lindsay Wood, a leading mining engineer; George Elliot, W. T. Lewis and others. It will be much more closely studied in this country since the disasters at Walsenburg, Col., and Pocahontas, Va., have taught us to hope no longer for that comparative immunity from danger we were fondly cherishing. Our State Legislatures have one by one attempted to deal with the question, often at the suggestion of labor organizations. They have only too frequently done so in a bungling manner, or have allowed themselves to be carried away by the zeal of mining inspectors, who show the tendency of demanding more than operators could well carry out. They generally fall into the error of burdening such legislative enactments with details the enforcement of which would be practically impossible.

The interest in the report of the English commission, of course, centers in the position taken on the causes of fire-damp explosions and the best means of guarding against them. The commission put at rest, we trust forever, the idea entertained by so many that variations in atmospheric pres-

sure exert so much influence upon the escape of gas that reliance can be placed on the issue of meteorological warnings. It was once widely believed that the barometer might be a valued aid to the mining engineer, and it was proposed to utilize telegraphic predictions of its movements to put him on the alert. The commission hold that such "warnings can at best only convey very imperfect information, which, moreover, may sometimes be dangerously misleading."

On the question of the influence of coal-dust in extending and aggravating the injurious effects of fire-damp explosions, and the allied subject of firing shots in fiery mines, the commission takes strong ground. It is stated to be an established fact that it is possible that a blown-out powder shot may cause an explosion similar in its effects to a gas explosion in a dry mine quite free from fire-damp if the coal-dust is exceptionally inflammable. The presence of coal-dust, too, may make air explosive which contains only from 2 to 2.5 per cent. of marsh gas, a quantity which the ordinary tests with a safety lamp fail to reveal. It is recognized that a total removal of the dust is not practicable; experience has taught, further, that watering is not as effective as expected. The commission reaches the conclusion that these two methods should be combined as far as possible and that the firing of powder shots should be entirely prohibited where such conditions prevail. They urge the substitution either of the lime cartridge, of coal cutters or of high explosives used in conjunction with water. Those interested in coal mining will look forward with interest to the record of experiments which are relied upon to justify this verdict, and will count the cost, which seems to have very little weight with the commission.

The report unconditionally condemns the Davy and Clanny safety lamps, the very types most used both in England and here, on the ground that a current of air having a velocity of 400 and 600 feet per minute respectively causes the flame to strike through the gauze. When it is considered that there are instances in English collieries where the ventilating current reaches 2000 feet per minute, the justice of this decision will be acknowledged. Four lamps are specially recommended as combining a high degree of security with fair illuminating power and simplicity of construction. They are the Gray, the Marsant, the bonneted Museler and the Evan Thomas modification of the bonneted Clanny lamp.

Taken as a whole, the report is one which deserves thorough study, and which in the light of our present knowledge may be safely followed. In the absence of the evidence upon which some of their recommendations are based, it is impossible to condemn the commission for advocating the use of appliances which have not yet received the sanction of acceptance in practice. It is on this very point that such bodies and those actually engaged in mining are most likely to quarrel. An accident commission is only too likely to treat every point by considering only its bearing on safety. Operators and miners look at it chiefly as it affects the results of their labors. Experience has shown that the men are far more impatient of any rules, or of the introduction of any appliances which may increase their work or diminish their wages, than the operators. To the latter an explosion means sometimes financial ruin, and always heavy loss, and the fact is that they are usually far more ready to make sacrifices for the sake of safety. Yet in the public mind mine accidents are associated with careless or reckless mine owners, and legislation is shaped largely on that theory. Any one who has watched the inexperienced younger men at any dangerous calling with which they have become moderately familiar will understand where only too frequently the blame really lies.

The Rail Combination.

The steel-rail trade continues to be quoted widely as that great branch of our iron industry which is in a prosperous condition, and the outlook for which is so bright as to justify favorable inferences concerning other departments. It has been argued again and again, and it is accepted generally as an incontrovertible fact, that our iron works can have fairly full employment only when the railroads are buying normal quantities for renewal and are extending their lines into new territory at the same time. They are doing this now, there being no better gauge to it than their purchases of rails. According to the Board of Control, the orders booked for 1886 delivery up to the 1st of April aggregated 869,000 tons, and since then a number of additional orders have been placed, carrying the total to at least 900,000 tons. According to these returns, also, a number of the leading mills have filled their allotment of the 1,100,000 distributed, and before long the question may again come up whether or not there is to be a further increase. There is a disposition among some of those connected prominently with the industry to discourage anything that may tend to create in the minds of buyers the impression that the rail product is held in check by a powerful combination. There are those who give expression to the opinion that the rail combination has accomplished its mission, and who declare that they will sell until their whole capacity is provided for. Others still maintain the position that

it was unwise to allow rails to reach the point they rose to and were maintained at, and who warned their fellow-manufacturers that they would take active steps to counteract any attempts to force them up to even a higher level.

The result of the happenings of the past three months has been that considerably less interest is taken by those most directly concerned in the doings of the rail combination. The demand has been such that it has put a good many of the mills into a very independent position in regard to the market. It would not be wise, however, to discard too early an organization which at least gave an impetus to the movement toward higher values. We are far from overrating its importance in the past or its possibilities of usefulness in the future. The formation of the combination caused a rush of buying which a fairly steady call for additional work has sustained. On the other hand it is becoming more and more evident that the general improvement in plant and methods during the last three years has carried the capacity above the figures generally believed to be conservative. It remains to be seen whether new mileage this year will be great enough to require all of the rails which the mills are capable of producing. The outlook is certainly encouraging. The Western and Southern railroads have been buying very largely, and it is likely that some large requirements may still come up. But with all the business done, and a fair proportion of that in sight, a small excess of capacity still remains. It is true that a moderate demand during the fall and winter may absorb it, but it would not be wise until there is absolute certainty of this to assume that the combination should be allowed to become a thing of the past.

While in this country some rail manufacturers are beginning to lose interest in their combination, from overconfidence in the future, a sharp struggle is staring into the faces of British and Continental makers. The International Steel Rail Makers' Association is dead, an event which has been celebrated by the publication of an epitaph by an otherwise solemn contemporary, *Iron*. As the first combination in the iron trade in which the producers of more than one country were members, its brief career of a little more than two years is interesting. It proved that the obstacles in the way of a successful continuance of any combination among manufacturers in one country are vastly increased when it tries to become international.

Effect of the New Railroads in Mexico.

Except on its northern border Mexico has few rivers navigable beyond a short distance either on the Atlantic or Pacific coast. There are, indeed, few countries needing an extensive railroad system so much. Nine-tenths of the country is mountainous, and the conveyance of passengers and merchandise is difficult and expensive during the rainy season. Hence the changes which the railways already constructed have brought about are many and important, and will be more striking as they increase. Ever since the Spaniards conquered Mexico Vera Cruz has been the gate through which the commerce of the country entered and emerged on the Atlantic, while on the Pacific there was Acapulco for trade with the East Indies. English capitalists built the railroad between Vera Cruz and the capital. The cost of construction was heavy, owing to the great engineering difficulties, and passenger and freight rates were correspondingly high, yet, being the only railroad route, the charges had to be submitted to until the new system, two years ago, was linked to ours. The rapid decline which has since marked the maritime movement at Vera Cruz foreshadows what the future of that port is likely to be. The following table shows at a glance the maritime movement at Vera Cruz for the past three years:

	1885.	1884.	1883.
Vessels entered..	401	557	607
Of which steamers..	230	292	313
Sailing vessels..	171	265	294
Of which sea-going arriving from abroad..	197	232	278
Coastwise..	254	335	374
There were under foreign flag..	164	223	276
Mexican flag..	237	334	331
Freight from foreign ports, tons..	97,000	113,300	161,060
Value of goods..	\$94,300,000	\$94,730,000	\$93,680,000
Coastwise freight, tons..	10,443	11,590	5,328
Value of goods..	\$2,080,000	\$1,960,000	\$1,700,000

While the decline in foreign trade is striking, the coastwise traffic has been on the increase. In order to counteract this tendency of goods arriving in the interior from the United States by rail, instead of by steamer via Vera Cruz and thence by rail, the local authorities have abolished certain onerous transit dues, the railway has reduced freights, forwarding agents have lowered their charges, and an expensive breakwater is to be built by a French company to serve as a protection against the northers. But it will take a great many years before it can be finished. Meanwhile merchants in the capital and elsewhere in the interior find it cheaper and more expeditious to get their merchandise via El Paso. After the railroads shall extend on the Pacific down to Acapulco and Mazatlan changes of traffic will occur in that part of Mexico, but their precise nature cannot yet be foreseen. Both ports, instead of declining, like Vera Cruz, may, on the contrary, improve. Hitherto they have been altogether too distant from Europe and this

country, except via Panama and San Francisco; the railways will shorten all these distances. Acapulco has evidently a great future before it, and will once more become the highway to the East Indies and China. It is contemplated, it seems, to procure Chinese labor on a large scale direct via the Pacific ports.

Since Diaz was reinstated as President Mexico has been snatched from the brink of financial ruin and revolution, toward which she was fast drifting under his weak and improvident predecessor, Gonzalez. The partial suspension of payment to which Diaz was compelled to resort a year since has enforced a more judicious husbanding of the national resources, and, as he is considered an impartial, honest man, there is full confidence that he will meet all engagements in full, including the railroad subsidies, if time be left him to carry out the financial reforms he has undertaken. Meanwhile Mexico has been politically quiet, and there is nobody now to disturb the even course of further material developments. There has been some disappointment because since their regeneration the Mexicans do not consume more foreign goods. Considering the circumstances, however, we think they have done remarkably well. In the first place, there was the Gonzalez administration and the want of confidence it inspired; then the trouble of the nickel coin that was made to flood the country; next the taxes or commercial dealings of all kinds, and finally the shifting of trade through the new railroads, which was an element of disturbance till commerce found its proper channels.

A few statistics will cast sufficient light on the actual status of the country. With an area of 1,946,292 sq. km., Mexico has a population of 10,447,974, only 19 per cent. of the same being white people, 38 per cent. pure Indians, and 43 per cent. mixed races. Except coarse cotton, some hardware and tools, and a few other kinds of merchandise of the less expensive nature, consumed by 81 per cent. of the population, the whites, numbering about 2,000,000, are expected to consume what Mexico produces and imports in the way of manufactures. As the climate is mild and the habits even of the white people are by no means extravagant, the well-to-do of them included, Mexican consumption of imported goods is restricted to medium qualities, so that the import figure is kept within a more moderate limit than would be the case if a large class of the people indulged in luxuries. The present rapid decline in the value of silver has also operated against liberal importations. Mexico produces annually about \$25,000,000 of silver, and pays its foreign indebtedness chiefly in that metal.

The new administration, by its vigorous policy, has put the budget for 1885-86 into good shape, as follows:

Expenditure.....	\$22,500,000
Less discount in the shape of reduced salaries.....	2,211,345
Total.....	\$20,288,655
Deficit June 30, 1885.....	\$4,043,600
Total.....	\$14,245,055
Income.....	\$27,000,000
Treasury notes issued.....	25,000,000—52,000,000
Available in cash.....	\$7,677,945

The Mexican army has been reduced to 18,804 men and 1741 officers. The navy is composed of four gunboats. There are at present in operation in Mexico 3754 miles of railway, including 22 miles of tramway. Of telegraphs there are 327 offices, the extent of lines being 19,585 miles, two-thirds of which is the property of the Government, including 440 miles of cable; the net receipts were \$840,139 and the outlay was \$503,242. There are 892 post offices, forwarding 19,788,657 items of mail matter, and collecting \$817,243 postage. Including \$33,473,253 silver, the export in 1883-84 was distributed as follows:

To England.....	\$19,340,128
To the United States.....	21,824,401
To France.....	2,881,969
To Spain.....	1,016,727
To Germany.....	1,318,270
To South America.....	358,578
To other countries.....	85,328—\$46,725,696

American trade with Mexico, including merchandise only, was as follows:

Calendar year.	Import.	Export.
1885.....	\$10,491,590	\$7,271,728
1884.....	8,640,576	8,730,328

The chief imports during the fiscal year 1885 were:

Coffee, 10,041,421 pounds.....	\$679,588
Hides and skins.....	1,675,125
Lard, 2,232,180 pounds.....	2,593,648
Wool, 1,662,760 pounds.....	122,504
Vanilla beans, 67,418 pounds.....	312,202
Total.....	\$5,757,911
Import of silver.....	\$14,919,611

The principal domestic exports were as under:

Indian corn, 3,668,987 bushels.....	\$1,371,318
Cotton goods, 9,501,840 yards.....	383,399
Powder.....	235,831
Machinery and hardware.....	1,395,979
Petroleum, 1,664,564 gallons.....	297,478
Flour, 18,165 barrels.....	139,385
Lard, 2,232,180 pounds.....	2,593,648
Quicksilver, 480,700 pounds.....	166,312
Sugar, refined, 1,280,674 pounds.....	98,540
Leaf tobacco, 1,317,363 pounds.....	142,954
Total.....	\$4,968,273

Hardware and tools probably have the best chance to sell largely in Mexico from this time forward. Cotton goods would be next in order, but, even under the new treaty yet to be carried out, Mexico has taken good care to protect this, about its only flourishing domestic industry.

There entered the ports of the Republic last year 1,000,000 tons of shipping. There navigate under the Mexican flag 421 steam-going vessels and 847 coasting craft. The diminishing trade of the leading port is certainly the most encouraging sign that the

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overland railway traffic is gradually absorbing Mexican foreign trade, and that, with or without special commercial treaties, the bulk of the business will fall to our share. Meanwhile so many American merchants and capitalists are continually visiting Mexico, both from the Atlantic and Pacific sides, that the general commercial public are becoming thoroughly informed as to the best methods of cultivating relations with a country so important to us.

Liquid Fuel Burners.

While developments in the use of liquid fuels have of late been rapid and in many respects encouraging, several important details of the subject have been passed over lightly, perhaps with the intention of subsequent improvement, but, at all events, at the expense of advantages which might readily have been secured at the outset. It is to be assumed that, as in the practical application of natural gas to steam-raising, the promoters of the various liquid fuel projects found that the burners to be employed constituted elements in the problem upon which much of the success depended. It was therefore to be expected that special attention would be given to these, and that the relative merits of the different combustion attachments brought out would be carefully examined and disposed of accordingly. As a matter of fact very little work of this kind seems to have been done, and the satisfaction attending the use of petroleum as a steam-raising fuel, reported in many places, is no doubt attributable to a great extent to its convenience rather than to its advantages, viewed from the standpoint of economy.

It is a noteworthy circumstance that in nearly all the burners which have thus far been brought forward prominently steam is used to spray the petroleum, and the way in which these devices have been presented has led to the popular belief that this is not only the cheapest and most convenient, but also the most satisfactory method of accomplishing the object. The idea of using air as the spraying agent, which at first suggested itself for development, and which has been followed up in isolated cases, has been lost sight of to a great extent, and with it the attending benefits. An explanation why this should be the case may be derived from the fact that the plan necessitates the use of an air compressor of some kind or of a fan. The working of these calls for the expenditure of a certain amount of power and entails also the expense of wear and tear incident to the use of such apparatus. However, it is yet to be proved that these combined costs outweigh in all cases the advantages of the method. For marine boilers the air atomizer presents the readily apparent advantage of avoiding entirely the great consumption of water caused by the use of a steam jet, the quantity necessary for a good type of steam atomizer having been found to range from about one tenth to one twelfth of the total quantity of water evaporated. The importance of this point cannot be ignored. The steam passing through the atomizer is practically lost, and the water must be replaced either by the use of special distilling apparatus or by sea water. Neither plan of making up for this constant drain on the water supply of a vessel can be regarded very favorably. It must also be remembered that the use of steam in an atomizer detracts appreciably from the available heating effect of the oil. Where, therefore, there are prospects of an extensive use of liquid fuels, something more than superficial investigation of the comparative merits of the two forms of burners would be well repaid.

Recognizing the fact that an intimate mixture of the combustible with the air supply is an essential requirement of thorough combustion, it is not difficult to understand why the air atomizer should receive special consideration. Heating and regulation of the air supply can be readily accomplished with it, and lend additional weight to its claims. It is of interest to note, therefore, that in France the air atomizer is regarded with renewed attention, and it is not improbable that encouraging practical demonstrations will there be given of its capabilities.

The London Economist has had the courage to call attention to an evil which is not confined to financial matters in Great Britain. It cites a number of instances, in connection with large loans negotiated for foreign countries, in which some of the greatest banking houses in the world acted as sponsors, involving a heavy loss to their clients. Our English contemporary does not charge that the large firms it names would be connected with anything they knew to be unsound, but it does hold that they do not examine closely enough the good faith of the borrower whose agent they become. It may be held that, acting simply in the capacity of intermediaries, they cannot be held responsible for the result of an investment, but the fact remains that the coupling of a great name with negotiations of this kind carries with it in the minds of many investors the conviction that the financial standing of the borrower must be sound. In the past few years that view has been pretty thoroughly shaken in this country, and yet it lingers in so many quarters that the warning can not be repeated too often to thoroughly investi-

gate, not alone the merits of the enterprise, but also the record of the individuals connected with it, irrespective of the high standing of those who are placing it on the market. The distressed condition of our railroad and manufacturing industries is largely due to the fact that leading names were lent to float preposterous enterprises.

The transcontinental railroad war is having a very serious effect upon the business interests of California in many ways. That market is a limited one and is easily upset by any unusual supplies. Merchants who are unable to carry on business without having comparatively heavy stocks see the market flooded with cheaper goods, and view with dismay the depreciation of values going on. Even small dealers are having goods bought in the Chicago and Eastern markets brought to them under the low rates of freight, and for a long time to come business has been thoroughly disorganized. Under this flood of goods California manufacturers will have a hard time of it perhaps for a year or more.

Piston-rod fastenings for both piston and cross-head ends can scarcely be said to have thus far constituted fruitful sources of accidents, but where failures have been recorded the resulting damage has naturally been exceedingly heavy. Broken cylinder-heads and walls convey costly lessons, and the desirability of avoiding them need not be pointed out. It will, nevertheless, be found that in many instances examinations of piston-rod fastenings, more particularly those at the piston ends, are conducted very loosely, if at all, and rigorous inspection would reveal a state of things more surprising than agreeable. Attention was prominently directed to the matter several years ago by a serious accident on board a British steamship, where the piston had become detached from the rod through the decay of a screw-thread and was driven through the cylinder cover, breaking a portion out of the side of the cylinder as well. The rod in this case was secured to the piston in a way which is still adopted in some engines. The lower end of the rod formed a frustum of a cone, with the smaller end next to the crank end. This cone was nearly as long as the piston was thick, and a nut slipped over the piston rod engaged with a thread cut just above the cone. By turning this nut the cone was drawn upward, firmly securing the piston. In a number of similar fastenings on several marine engines examined shortly after the accident had occurred serious corrosion of the screw-threads was found, suggestive of what would have ultimately happened in the absence of inspection. Considerable speculation has been indulged in as to the cause of this corrosion. One explanation which has been given and accepted by many is that the grease used for the lubrication of the cylinders contains sulphuric acid, employed in purifying the tallow. This grease gradually works into the threads and accomplishes their destruction. Galvanic action also has been suggested as a possible destroying agent. But, whatever be the cause, there is ample proof of the advisability of occasional examination. It is not merely a matter of pecuniary interest, but one of safety, and as such demands close attention.

To secure high feed-water temperatures with little or no back pressure in the engine when using exhaust steam is the aim of every maker of feed-water heaters. The higher the former and the lower the latter the more reason has the builder to be satisfied with his work. The figures are direct measures of the economy secured by the heaters, and as such are not only carefully considered by intending purchasers, but are often obtained by the makers only after special and closely guarded manipulation. In many cases also the old and absurd claim of being able to heat the water supply above 212° without causing back pressure, or, in other words, to successfully use steam of a temperature of 212° to heat water to a temperature above 212°, has been resurrected. In every instance, therefore, the choice of heater should be made dependent upon judgment rather than upon implicit confidence in makers' figures, and no expectations of phenomenal results should be entertained.

Nova Scotia is agitating vigorously in favor of a severance from Canada and restoration of independence. The present position compared with 1867, before confederation, is represented to be disheartening. In 1867 the Province had a customs tariff of 8 per cent., the revenue was ample for every need, the public debt was only \$3,250,000 and taxation was low. In 1886 the Canadian customs tariff is 50 per cent. and the revenue not nearly sufficient, taxation is enormous and burdensome to a degree, and the Province's share of the Dominion's debt is over \$28,000,000, with little else to show for it than a section of the Intercolonial Railway.

A cyclone that swept through Minnesota and Western Iowa last week was terribly destructive. The number of persons killed is large. At St. Cloud alone 54 were attended in the hospital. The loss of property at that point is estimated at \$70,000, and in Sauk Rapids \$180,000. Farmers from the northwest part of the country tell almost incredible stories of finding remnants of buildings on their property 20 miles distant from the city.

THE WEEK.

A site for a proposed new Stock Exchange on Broad street and Exchange place has been conditionally purchased for \$5,500,000. The block contains about 110,000 square feet or 3 acres of buildings. On account of differences of opinion among members of the Exchange it is doubtful whether the purchase will be made absolute.

An Atlantic cable war promises, for a time at least, low rates to Europe, the contest being between the United Cable Co. and the Mackay-Bennett cables. The reduction of rates is from 40 cents to 12 cents for commercial messages, and from 20 cents to 6 cents for press messages, so that the people can for the present do their cabling very cheaply.

The iron steamship State of California was run into amidsthips by a sailing vessel when approaching the harbor of San Francisco and cut down to the water's edge. All hands were immediately ordered to trim ship to port, and by listing her she was enabled to reach her destination without further mishap. One of her passengers was also a passenger on the ill-fated Oregon.

An important railway scheme just being carried into execution is a direct northerly connection between Minneapolis and the Northern Pacific Railroad at Glenwood. The route is through one of the finest portions of the State, and the contract requires the completion of the work by the 1st of January next.

The question of shorter hours, which is being agitated at the meetings of the Central Labor Union, in this city, shows that there is no uniformity in the eight-hour demand. The tin and slate roofers asked for eight hours, but have compromised upon nine. The machinists' and pattern-makers' unions are to demand nine hours. The iron molders reported that 23 out of the 28 foundries had agreed to work only 10 hours each day. The Central Labor Union are to hold a mass meeting in Union square on the evening of May 1, preceded by a torchlight parade.

Large quantities of wheat stored in elevators in Chicago, some of it fully two years, are being transferred to elevators with dispatch, to escape the enhanced rates for summer storage. Rates by water are double what they were a year ago.

Charles F. Crocker, of San Francisco, writes to Vice-President Crocker, of the Southern and Central Pacific system, that the cutting of Transcontinental rates was of an immense benefit to the company and the Pacific Coast. He is ordering additional rolling stock, and says if he could get 1000 box cars immediately he could use them until far into the winter.

The long-talked-of bridge across the Ohio from Cincinnati to Covington will be commenced and finished within 18 months, at a cost of \$3,000,000. It will be of steel and iron, with space for two railway tracks, a wagon road and footway.

Mr. Gladstone's second measure for ameliorating the distress of Ireland is known as the Irish Land Purchase bill, now before the House of Commons. It provides for the buying out of Irish landlords at a cost of \$250,000,000. This sum will not come out of the pockets of the British tax-payer, but will be raised by the issue of Irish 3 per cent. consols, guaranteed by the British Government on the mortgage of the lands purchased. The price to be paid is, as a general thing, on the valuation of a 20 years' rental.

Police Justice Duffy, of this city, has made short work with boycotters brought before him in several instances. Being asked by several strikers on one occasion how far they could go in the business of boycotting, he said that "they had a right to accost and talk with men employed by the firm if such men were willing to talk, and the discussion was not an angry one, and did not obstruct the street or cause annoyance. But the strikers must not hustle, threaten, intimidate or impede any one."

The Thirtieth Cincinnati Industrial Exposition will open September 1. These exhibitions are managed by a Board of Commissioners appointed by the Chamber of Commerce, Board of Trade and Ohio Mechanics' Institute. No awards or prizes will be given.

The business of the Union Ferry Co. is gradually vanishing under the competition of the great bridge, more especially since the return of milder weather. Receipts have shrunk from \$2,000,000 a year to \$300,000, and now it becomes necessary to take off another boat to reduce expenses.

Berbohm's Corn Trade List, standard authority in grain matters, enters into elaborate calculations of supplies, consumption and stock of wheat and flour in various countries, arriving at the conclusion with regard to the world at large that there is a deficit on this crop year's supplies of 64,000,000 bushels, to be drawn out of the reserves, which are already lower than they have been in several years, and which Berbohm admits will be reduced to a low point when the season is over, especially in France, as well as the United Kingdom. Of the acreage sown to wheat this year he says it is probably somewhat reduced in Western Europe, as well as in the Atlantic States,

while the Pacific Coast is reported to be seriously reduced, as well as the acreage just harvested in India. The condition of the growing crops, however, is almost universally good.

George H. Corliss, of Providence, R. I., furnished the drawings of the engine for driving Krupp's Iron Works, at Essen, which Mr. Conway describes as being "over 50 feet high and quite beautiful, and apart by itself strong enough to carry on all the works." The King of the Belgians only lately bestowed on Mr. Corliss the Order of Leopold.

The four sons of the late Wm. H. Vanderbilt announce their purpose of giving jointly the sum of \$250,000 for the construction of a building to be known as the Vanderbilt Clinic, otherwise a free maternity hospital, to be turned over when finished to the College of Physicians and Surgeons, thus supplementing the original gift by Mr. Vanderbilt of \$500,000 for the enlargement of that institution.

Jay Gould sometimes does business on a large scale, and is an extensive employer. In a letter to Mr. Powderly he says he has had at times probably as high as 50,000 men in his employ, "distributing often \$3,000,000 or \$4,000,000 a month to different pay-rolls." And yet he claims to have had no serious difficulty with any of these men until now.

Parties supposed to be interested in certain contemplated improvements on Staten Island, in behalf of the Baltimore and Ohio Railroad, have bills now before the Legislature of this State asking for a grant in perpetuity of extensive tracts of submerged lands opposite the present shore line. The construction of piers and warehouses is also included in the scheme.

While experiments were being made last Saturday in Pittsburgh at the iron works of Singer, Nimick & Co. in compressing steel, the mold, containing over 1000 pounds of molten steel, suddenly gave way, scattering the metal in every direction. Fifty or 60 persons were witnessing the experiment, and nearly half of them were more or less burned. Five are supposed to be dangerously injured. The damage to the mill is very slight.

A colossal statue of General Meade, by the sculptor A. M. Calder, of Philadelphia, is ready to be cast into bronze, and will cost \$25,000.

The principal streets of Chicago have been cleared of telegraph poles, and it is said that the various companies find that their wires work much better underground than overhead.

The Newfoundland seal catch this year is enormous, but the price of furs is only 17/6 per 100 pounds, as against 40/ a few years ago.

The River and Harbor bill now before the House calls for \$15,120,700, or nearly \$5,000,000 more than the estimates of the engineers. New York is down for \$875,000. The 15 States represented on the committee receive two-thirds of the whole amount.

Speaker Carlisle has appointed the committee under the Curtin resolution which is to investigate the labor troubles in the West. Mr. Curtin is chairman. With him are associated Messrs. Crain, of Texas; Outhwaite, of Ohio; Stewart, of Vermont; Parker, of New York, and Buchanan, of New Jersey.

Mexican editors are in no haste to endorse Senator Frye's scheme for a grand continental Congress, to embrace the States of North and South America. If the object is so desirable, one of them asks, "Why does not Congress pass the bill for imparting practical effect to the reciprocity treaty which has been hanging fire in that body now for nearly two years?"

Andrew Carnegie, the wealthy iron manufacturer, who came to this country from Scotland as a boy, and commenced work at \$2.50 a week, has written a work entitled "Triumph of Democracy," in which he points with pride to the commercial capabilities of the United States. The coal area of this country, he says, is equal to three-quarters of the world's supply. Our cotton manufactures have increased faster than those of any other country. The single city of Philadelphia makes more yards of carpet than the whole of Great Britain. No other people have devised so many labor-saving machines and appliances, giving to the world the cotton-gin, the first practical mowing, reaping and sowing machines, and here electricity has had its greatest triumph. American farms have an area larger than the four greatest European countries, Russia alone excepted.

The new submarine torpedo-boat Nautilus, designed by Lieutenant Zalinski and John Holland, made a trial trip last week, going as far as Navesink. The boat is 52 feet in length and 8 feet in diameter, cigar-shaped. The highest part of her deck above water is only 18 inches. In the center of the convex surface is a small turret, the opening just large enough for the passage of a man's body. On the top of it sits, upon rubber cushions to keep out the water, an iron helmet with a deadlight in the roof and a circle of deadlights around its base, through which the pilot can see to direct the boat's movements. This helmet is opened and closed by a system of levers within, which hold its

edge firmly upon the rubber cushions when the boat is submerged. Under the iron floor are 14 tons of bar iron cemented together for ballast. Behind the iron side walls of the interior are long air reservoirs, which when filled will bear a pressure of 2500 pounds per square inch and hold a large enough supply to run the engines at a moderate speed and furnish breathing supply to the crew for a 12 hours' trip under the water, or run the engines two hours at full speed. Around these air cylinders is space for water, enough of which can be let in to sink the Nautilus so that only the top of her turret is above the surface. The engine, astern of the turret, burns about 5 gallons of petroleum an hour when run at full speed. The engine of 30 horse-power now in use is to be replaced by a 120-horse-power petroleum engine which Mr. John Holland is constructing on an improved plan for saving space. By a system of air-pipes the screw is connected with the engine from the turret, and the captain directs his craft from that point, the rudder being also controlled there. The engine runs independently of the screw. The captain needs only one assistant to manage the boat. Along the base of what might be called the "cabin," in the center of the boat, are two receivers, to be used for storing the compressed air for the dynamite guns. An 18 foot gun will be mounted in the boat, only the muzzle projecting out in front.

Mr. John Bigelow, who recently accepted M. de Lesseppe's invitation to examine the canal excavation at Panama, has made a detailed report to the New York Chamber of Commerce, describing the present state of the work, but he attempts no prediction as to the amount of expenditure that may be required, nor when this truly formidable undertaking may become valuable as an auxiliary to the world's commerce. "This work," says Mr. Bigelow, "which, for its inevitable cost—and, if accomplished, for the magnitude of its material results—has no parallel among private enterprises in all history, is attended by so many uncertain and unworkable conditions that the estimates of the most gifted and experienced engineers are at the best but conjectures. Every step that is taken, therefore, is more or less experimental, and defies any attempt at reduction to scientific equation." Enormous difficulties remain to be overcome, such as the control of the Chagros River and the cut through the Andes at Culebra. The problem of securing the amount of labor required, although there are some 12,000 men on the rolls, may eventually be solved by the introduction of machines. As to the financial question the receipts thus far from all sources are about \$120,000,000. If the figures can be trusted, about half the estimated cost of the canal will have been expended by the close of the year, while at least four-fifths of the excavation, not to speak of supplementary or precautionary work, will remain to be executed. Mr. Bigelow finds it difficult to believe that the canal can be opened from sea to sea for an additional sum no larger than that just named, but he adds: "That the canal will now be prosecuted to its completion without any very serious interruption is fairly to be presumed, for too large a proportion of its cost has already been incurred to make a retreat as good policy as an advance. Even if abandoned by the company, the contractors themselves would probably find it for their interest to combine and finish it."

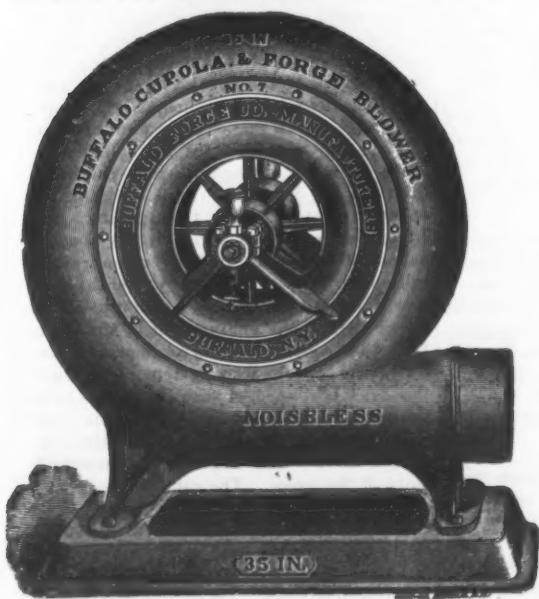
A strike on the horse-car railroads in this city, which originated in differences between the employees of the Third Avenue Railroad and the officers, resulted on Monday in a general tie-up, with trifling exceptions, but after a protracted conference between the parties directly concerned and the city authorities, in which the Street Railroad Commissioners participated, travel was resumed on Tuesday, the Executive Committee of the Empire Protective Association yielding their consent, except as to the Third Avenue Co., whose cars were run under police protection.

In reply to the assertion that labor is inadequately paid in California, Hamilton Lindsey, of San Francisco, makes a comparison of wages in 15 callings at principal points in Europe and the United States, and striking an average finds the earnings in San Francisco are nearly 50 per cent. higher than in New York or Chicago, and nearly three times higher than in Great Britain. It also appears that the same amount of money will go as far in California in purchasing the necessities of life as in the Eastern States. From these facts inferences are drawn respecting the policy of Chinese exclusion.

The principal business streets of Montreal were flooded by the rise of the St. Lawrence, and valuable merchandise in large quantities was destroyed. The water reached the enormous height of 42 feet 7 inches above low-water mark, and over a foot above the great flood of 1861.

The traffic statement for the Brooklyn Bridge for March shows that the receipts from the promenade were \$1283.89, a decrease from last year of \$346.09; carriage-ways, \$4991.74, an increase of \$345.91; railroad, \$57,059.85, an increase of \$15,993.29; total receipts, \$63,365.48, an increase of \$15,993.11. The expenditures for the month as shown by the statement of the treasurer were \$44,322.31, leaving, with the balance brought forward, \$73,372.54 as cash on hand and in bank.

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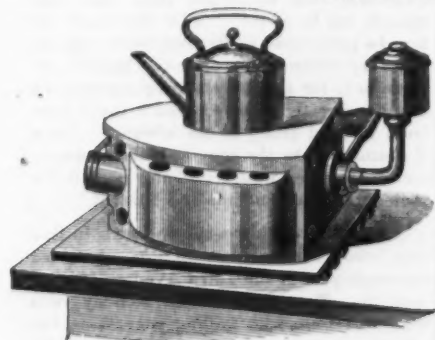
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The plant of our works embraces complete equipment for Iron Foundry, Machine Shop, Polishing, Brons 12, Japanning, Coppering, Lacquering, Brass Electro-Plating on Iron, and Pattern Designing and Building in Wood, Soft Metal, Brass and Iron.

A. F. PIKE MFG. CO.,
Pike Station, New Hampshire, U. S. A.
Cable Address, "Pike, Haverhill."
MANUFACTURERS AND WHOLESALE DEALERS IN
BLUE STONE.
The Largest Manufacturers and Dealers in Stones for Sharpening all Edge Tools.

Pike's celebrated Blue Stone, Indian Road (Red), Limestone, Black Diamond, Magic Green Mountain. All kinds branded with our name are genuine. Also Oil, Water and Dry Whetstones, Arkansas, Washita, Turkey, Hindostan and Sandstone. Razor Honers Vienna Clear shape. In fact, everything that is used for sharpening Edge Tools supplied in any grit or shape required. Quality and Price guaranteed. Send in your orders.

GUN POWDER.

LAFLIN & RAND POWDER CO.,
No. 29 Murray Street, New York.
Manufacture and sell the following celebrated brands of Sporting powder, known everywhere as
Orange Lightning, Orange Ducking, Orange Rifle,
more popular than any Powder now in use.
BLASTING POWDER AND ELECTRICAL BLASTING APPARATUS. MILITARY POWDER on hand and made to order.
Safety Fuse, Frictional and Platinum Fuses. Pamphlets showing size of grain sent free.

"THE CARVER'S FRIEND."
SOLID EMERY
Knife Sharpeners.

OGDEN BOLTON, President. R. H. BULLEY, Treasurer.
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THE BOLTON STEEL COMPANY.
CANTON STEEL WORKS.

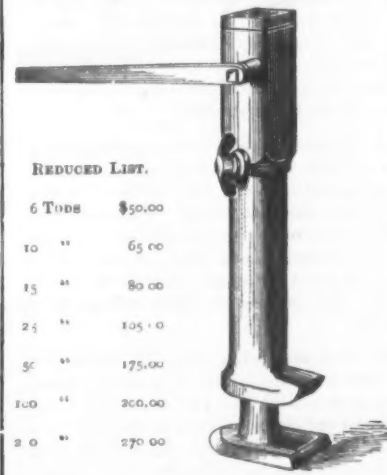
When ordering Steel please state for what purpose it is intended.

CANTON, OHIO, March 18, 1886.
Dear Sir: I have been using one of your "Carver's Friend" Solid Emery Knife Sharpeners now for several months, and have no hesitation in pronouncing it to be the best thing of the kind I have ever seen. It is infinitely superior to the regular "Steel," and will give an excellent edge to the dull and commonest table knife.
Very truly yours,
ALEX. THOMAS.

MANUFACTURED BY
W. H. PARKIN,
Cleveland, Ohio, U. S. A.
New York Office, 101 Chambers St.

TANGYE'S PATENT Hydraulic Lifting Jacks.

Cheapest Jack in the Market.

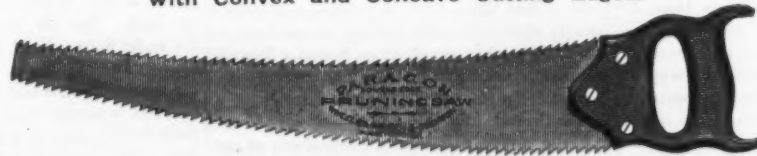


REDUCED LIST.
6 Tons \$50.00
10 " 65.00
15 " 80.00
25 " 105.00
50 " 175.00
100 " 250.00
200 " 270.00
Send for list of other sizes and discounts. Makers of Hydraulic Punching Bars, Girder Testers, Rail Benders, &c.
McCOY & SANDERS,
26 Warren Street, N. Y.

ALFRED F. BRAINERD,
Analytical Chemist & Mining Engineer,
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THE PARAGON PRUNING SAW,

With Convex and Concave Cutting Edges.



Patented April 1st, 1884.

THRUST CUT ON THE CONVEX EDGE.

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A FAIR TRIAL WILL DEMONSTRATE THAT

THIS IS THE BEST DOUBLE-EDGED SAW FOR TREES OR VINES.

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VIRGINIA NAIL AND IRON WORKS COMPANY,

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NAILS and Bar Iron of Superior Finish, made exclusively from Pig Iron.

Patented Articles of MALLEABLE IRON.

NEW pattern Heavy Screw Clamps. Strongest in the market.



HAMMER'S MALLEABLE IRON OILERS, 3 Sizes.
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For sale by all the principal Hardware Dealers. Send for Price List.
MALLEABLE IRON CASTINGS
of superior quality, and Hardware Specialties in Malleable Iron made to order.

HAMMER & CO.,
Branford Conn.

MERIDEN MALLEABLE IRON CO.,

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Manufacturers of a Full Line of the Latest Improved

Patent Adjustable Iron Planes.

THE BEST NOW IN THE MARKET.
Send for Full Descriptive Catalogue.

New York Office, 37 Barclay St. Boston Office, 147 Franklin St.

TELEPHONES SOLD.

Don't pay exorbitant rental fees to the Bell Telephone Company to use their Telephones on lines less than two miles in length. A few months' rental buys a first-class Telephone that is no infringement, and works splendid on lines for private use on any kind of wire, and works good in stormy weather. It makes homes pleasant, sanitarious, time, prevents burglaries, saves many steps, and is just what every business man and farmer should have to connect stores, houses, depots, factories, colleges, etc., etc. The only practicable and reliable Telephone that is sold outright and warranted to work. Chance for Agents. No previous experience required. Circulars free. **W. M. L. NORTON, Buffalo, N. Y.**

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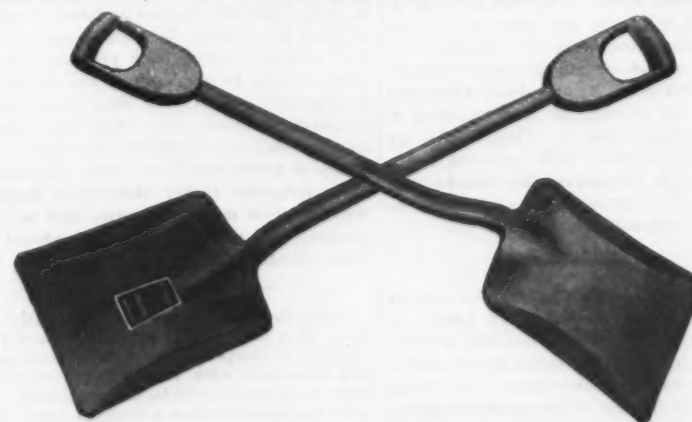
A book of 100 pages. The best book for an advertiser to consult, be he experienced or otherwise. It contains lists of newspapers and estimates of the cost of advertising. The advertiser who wants to spend one dollar finds in it the information he requires, while for him who will invest one hundred thousand dollars in advertising a scheme is indicated which will meet his every requirement, or can be made to do so by slight changes easily arrived at by correspondence. One hundred and fifty-three editions have been issued. Sent, postpaid, to any address for 10 cents. Apply to **GEO. F. BOWELL & CO., NEWSPAPER ADVERTISING BUREAU, 10 Spruce St. (Printing House Sq.), New York.**

HUSSEY, BINNS & CO., LIMITED,

Pittsburgh, Pa.,

Make a specialty of

Railroad, Contractors' and Miners



Also a full line of

SHOVELS, SPADES and SCOOPS

for the

HARDWARE TRADE.

COMMON SENSE POST HOLE DIGGERS.

COLD CHISELS, PUNCHES.

WOOD, COAL and STONE

WEDGES.

Prices quoted on application.

OHIO CLIP WORKS,

Westville, Ohio,

Sole Manufacturers of the

"BAKER" CLIP,

For Singletrees, Heavy Axes etc. "Baker" Lap Links, "Baker" Oval Lap Rings, Ferrules and Hooks, Neck Yoke Irons, etc. Best Goods Made. Ask for them where you buy your Hardware, or send for Prices &c.

The T. H. Bullock
The Best for the Money.
BELLOWS FORGES
Cleveland, Ohio.

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HOWARD IRON WORKS, Buffalo, N. Y.....41
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Special Notices.

PROPOSALS FOR PLYER PUNCHES FOR POSTAL NOTES.

POST OFFICE DEPARTMENT, 1
WASHINGTON, D. C., April 19, 1886.
SEALED PROPOSALS will be received at this Department until Saturday, the 23d day of May, 1886, at 12 o'clock noon, for furnishing plyer punches for use in the issue and payment of Postal Notes, in such numbers and at such times, and from time to time, as they may be ordered, during the fiscal year beginning July 1, 1886, and ending June 30, 1887.

The Postmaster General prescribes no model or sample for bidders, but choice among samples submitted will be made with reference to utility and price.

Blanks for proposals, with specifications giving full information and instructions, may be had on application to the Superintendent of the Money Order System, Post Office Department, Washington, D. C.

The Postmaster General reserves the right to reject any or all bids, and to waive technical defects.

A decision on the bids will be made on or before the 31st day of May, 1886.

WILLIAM F. VILAS, Postmaster General.

A New Pulley Lathe.

The best Machine ever designed for turning Pulleys.

It will finish from 16 to 60 inches in diameter by 24 inches face.

Price over one-third less than any other Machine for Pulley turning of like grade of work.

THE NEWARK MACHINE TOOL WORKS,

Newark, N. J.

SECOND HAND, CHEAP.

One 17 ft. bed, 30 in. Engine Lathe.
One 16 ft. " 25 in. " "
One No. 6 Sturtevant Pressure Blower.
One Profiling Machine.
One No. 3 Brown & Sharpe Screw Machine.
One 2 Spindle Pratt & Whitney Drill.
One 4 " " "
One 4 " " "
One Pittsburgh Milling Machine, Lincoln Pattern.
One Newton Milling Machine, boring head.
Send for List of Second hand Tools

New York Machinery Depot,

Bridge Store No. 16, on Frankfort St.,
NEW YORK.

THE LEXINGTON (VA.) MANUFACTURING CO., wish to lease for a term of years their FOUNDRY, BOILER AND MACHINE SHOPS, fronting 300 feet on side tracks of the Baltimore & Ohio and Richmond & Allegheny Railroads, at Lexington, Virginia. These shops are thoroughly equipped, with ample (water) power applied, and ready for occupancy, and are without the expenditure of a dollar. It is a fine opportunity for capitalists who wish to engage in any character of Iron manufacture in the center of Iron region of the James River Valley of Virginia.

Address THE LEXINGTON MFG. CO.,
Lexington, Va.

Iron Ore Bed For Sale.

Situated at Sharon Station, N. Y., & Harlem Railroad, an old, well-known bed of excellent Hematite Ore in unlimited quantity. Sale under foreclosure, to be at Poughkeepsie, N. Y., at 12 m., May 18th, 1886. Circular with other particulars will be sent if desired.

B. TURCK, Trustee, 29 Murray St.,
P. O. Box 3308, New York City.

FOR SALE.

An Oil Separator, made by C. F. Roper & Co., Boston, suitable for separating oil from drillings, cuttings from bolts, screws, &c. It will save enough oil to pay for the machine in a short time.

THE E. D. CLAPP MFG. CO.,
Auburn, N. Y.

For Sale.

A good, clean stock of Hardware, Stoves, and Tinware; will invoice about \$500; annual sales \$10,000; located in brick building, 22 x 30, two stories high; rents for \$100 per year; built for Hardware store; the only full stock in city; very light competition. The business is fully established. I have been in business nine years.

SIDNEY WOOD,
Chillicothe, Ill.

FOR SALE.

Stock of Hardware, &c.; Tin Shop, Tools, &c. Fine store. Bargain. Address
E. WONDERS,
659 Fourth Street, Detroit, Mich.

WANTED—By July 1st, a situation as Traveling Salesman, by a young man having four years experience in Retail and 12 years as Traveling Salesman to the Hardware trade; extensively acquainted with Jobbers of Hardware west of Cleveland through-out the Northern States. Prefer to represent Manufacturer direct to Jobbers. Address
"EXTENSIVE," P. O. Box 238, Marysville, Ohio

BUSINESS MANAGER.—The advertiser, aged 36, now occupying position of trust with a large manufacturing concern, desires a change of location on account of health of his family. He is a first-class bookkeeper and general business man. Good references and security bonds if desired. Address A. D. C., Office of The Iron Age, 66 and 68 Duane St., New York.

Wanted.

Superintending Mechanical Engineer to take charge of the Canadian Locomotive and Engine Co.'s Works, at Kingston, Ontario, Canada. Must be competent to undertake the construction of Locomotive, Stationary, Marine, Pumping and Hoisting Engines, &c., &c. In fact all the work of a general engineering establishment. Apply, stating age, experience, references and salary wanted to
W. M. MARTY, Managing Director.

SITUATION WANTED
By a practical Superintendent or Screwman in Plate, Iron or Steel; also expert Roll Turner.
Address BOX 37,
Coatesville, Pa.

Special Notices.

Removal Notice.

We will remove before May 1st to

OUR

NEW AND LARGER SHOPS,

204 to 210 East 43d Street,

NEW YORK.

WATSON & STILLMAN.

DISSOLUTION.

FRANKFORD, PHILADELPHIA, U. S. A.,
April 1st, 1886.

The co-partnership heretofore existing between the undersigned, under the firm name of Yerkes & Plumb, is dissolved this day by mutual consent.

The business will be conducted by Fayette R. Plumb, under the old firm name, he having purchased all the right, title and interest of Jonathan Yerkes, the retiring partner. He assumes all liabilities and becomes the sole owner of all the assets of the late firm.

JONATHAN YERKES,
FAYETTE R. PLUMB.

In retiring from a business in which I have taken an active interest for thirty years, I desire to avail myself of this opportunity to extend my warmest thanks to my old friends and customers, who have stood by me so faithfully during the last quarter of a century, and I heartily commend them to my former partner, with whom I have been so pleasantly associated for the past seventeen years.

JONATHAN YERKES.

WANTED an Engineering firm of position to manufacture on a sole license a Patent Refrigerating Machine, for several years in successful use in England, for which there is an increasing demand. It is the best machine of its class yet introduced, and, being very simple in construction, would yield the makers a handsome return. Apply
GAILWEY, BAINBRIDGE & CO.,
Warrington, England.

WANTED.

Manufacturers or Jobbers of Hardware, Tinware or Wood and Willow Ware, who have any lots of goods to close out—cheap for cash—will do well to address in confidence,
"HARDWARE,"
care Carrier No. 70, Post Office,
Baltimore, Md.

THE SUBSCRIBER, having a valuable Kaolin Pit on Staten Island, is desirous of selling its production to any party or parties who can control sales. Address
"KAOLIN,"
Office of The Iron Age, 66 and 68 Duane St., N. Y.

WANTED.

Two Boring and Turning Mills, 7 feet and 4 feet, with splining attachment preferred. Give full descriptions, maker's name, where they can be seen and lowest price. Address
"BORING MILLS," Box 343,
Providence, R. I.

A GENTLEMAN aged 45, an expert Accountant and Office Manager, having a valuable knowledge of Machinery and of Mechanical and Manufacturing processes acquired during 20 years connection with manufacturing and constructing concerns, wishes a position of responsibility where his experience will be available. References covering 20 years my record.

Address "D. J.," Box 111,
Office of The Iron Age, 66 and 68 Duane St., N. Y.

BARGAINS IN MACHINERY.

One 10-inch Rider Hot-Air Pump; used 6 weeks; good as new. \$250.
One Lewis Bolt Header, 12 sets dies.
One Chapin " "
One Travese Drill. Star Tool Co.
One 50-in. Ames Pulley Lathe; nearly new. \$150
One 32-in. Stevens Pulley Lathe. \$125.
Parties wanting desirable second-hand Wood or Iron-Working Machinery, address
W. H. ROBERTSON, 48 S. Canal St., Chicago.

Chicago Agency Wanted.

I shall move into my new four-story building, 168 Lake St., on May 1st, and having ample accommodation and men on the road, I am open to receive the agency of some line of goods not conflicting with my own.
A. J. McDONALD, Manfr. of Iron Pumps, Brass Goods, Steam Fittings, &c.
209 Lake St., Chicago, Ill.

For Sale.

One of the best located Hardware Stores in the Anthracite Coal Region of Central Pennsylvania. Stock consisting of Hardware, Iron and Steel, Stoves and Tinware, Glass, Paints and Oil; will invoice \$15,000 to \$17,000. Stand 35 years old in a town of 6000 inhabitants and splendid country trade. Must sell. Reason, ill-health.
Address "ANTHRACITE,"
Office of The Iron Age, 66 and 68 Duane Street, N. Y.

AN EXPERIENCED Hardware man wants a position in a Wholesale or Retail Philadelphia House. Speaks German and English. Best of references.
D. W. RICHARDS,
1814 Mervine Street, Philadelphia.

Special Notices.

ENGINES & BOILERS.

NEW AND SECOND-HAND.

The following new Slide Valve Engines guaranteed complete and first class:

One 18 x 24. One 10 x 12.
One 10 x 24. One 8 x 12.
One 12 x 16. One 8 x 10.
One 10 x 16. One 7 x 9.

Also One 12 x 20 Corlies Engine. New.
One 14 x 24 Adjustable Cut-Off Engine. New.
Also the following Second-hand, guaranteed in good condition:

One Corlies Cut-Off, 18 x 42.
One " 14 x 48.
One Wright " 22 x 42.
One " 18 x 32.
One Vertical Safety Power, 14 x 10.
One " 10 x 12.
One Corlies Beam Condensing Engine, 500 H. P.

One 18 x 48 Adjustable Cut-Off.
One 10 x 30.
One 12 x 34 Flat Slide Valve.

One 10 x 20 " "
One 10 x 21 " "
One 10 x 15 " "

Large stock assorted sizes new and latest improved Engines and Boilers. Plans, estimates and specifications furnished for Mills and Factories. Send for Circulars and Catalogues.

THE NEWELL UNIVERSAL MILL CO.,
10 Barclay Street, New York.

Rolling Mill Machinery.

Shears for cutting old Rails, with engine attached.

Small Shears for cutting finished Iron, with engine attached.

Machines for cutting and punching Flat Plates hot.

One 10-in. Train, Housings and Rolls.

One 9-in. " "
One Knuckle Pump.

One Cameron Pump.

Two Steam Pumps.

One No. 3 Gould & Garrison's Pump.

One 32-in. x 32 in. Vertical Condensing Steam Engine.

One Blower.

One Engine for running Blower.

Six Boilers with Columns and other Castings for 80 h. p.

Lathes for Turning Rolls.

Furnace Castings, Tools, Guides for Rolls, Pulleys, &c.

For sale together or separately.

DAN'L W. RICHARDS & CO.,
92 Mangin St.

Notice to the Trade.

The tensile strength of my Chains will be as follows hereafter:

CABLE CHAINS. CHAMPION CHAINS.

No. 110.....1250 lbs. No. 1, extra heavy, 650 lbs.

No. 10.....850 lbs. No. 2, extra heavy, 450 lbs.

No. 20.....800 lbs. No. 1, Regular.....550 lbs.

No. 30.....675 lbs. No. 2, Regular.....380 lbs.

No. 6, 3000 lbs. No. 4, 2500 lbs. No. 4, 1750 lbs.

The No. 30 Cable Chain will outwear the Champion or any similar chain as two to one, and will guarantee it for 10 years. Send for special price for quantities on this size chain.

We, the undersigned, on January 22, 1886, tested the different makes of Chains and found the Chains manufactured by Thomas Morton to be the strongest of all tested.

A. G. ROBERT & BRO., Builders,
112 Bank St., New York City.

JACKSON & COVENHOWER, Hardware,
659 Fulton St., Brooklyn.

GWYNNE & RICHARDSON, Hardware,
589 Hudson St., New York.

The average tensile strength of my Champion Chains over others of a similar make was 10 per cent, and my Chains are less liable to kink and are better finished and less in price. My Cable Chains are 25 per cent stronger, cheaper and better finished than the imported or any other riveted Chain in the market of the same weight.

THOMAS MORTON, 66 Elizabeth St., New York City.

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Special Notices.

Second-hand Machinery in Good Order. For Sale Cheap

1 Engine Lathe, 48 in. x 20 ft. bed.

1 " 36 in. x 18 ft. "

1 " 28 in. x 15 ft. "

1 " each 24 in. x 20 in. and 24 ft.

1 " 24 in. x 12 ft. bed. Field

1 " 22 in. x 12 ft. "

1 " 20 in. x 12 ft. and 10 ft. bed. Putnam.

1 " 17 in. x 8 ft. bed.

1 " 15 in. x 6 ft. " Porter, Rod feed only.

1 " 14 in. x 6 ft. " Ch. Isaac.

1 " 12 in. x 5 ft. "

2 Engine Lathes, 15 in. x 5 ft. Wm. Sellers & Co.

1 Planer.

1 " 17 in. x 17 in. x 3 1/2 ft.

1 " 20 in. x 20 in. x 4 and 5 ft.

1 " 30 in. x 30 in. x 7 ft.

1 " 30 in. x 30 in. x 8 ft.

1 " each 24 in. x 24 in. and 5 and 10 ft.

1 Shaper, 10-in. stroke. Pratt & Whitney.

12-in. B. & S. P. Drill.

1 each Upright Drill, 20 and 24 in., with Back Gears.

1 Lincoln Pat. No. 2 Miller.

1 Index Miller, Pond.

1 each 3 Spindles, No. 2 Drills, P. & W. Co.

1 each Nos. 1 and 2 Screw Machines. Wire Feed.

1 Pratt & Whitney. Plain, P. & W.

1 3/4 in. Drop Hammer. Beecher & Peck.

1 each 20 and 50 lb. Trip Hammers.

1 No. 3 Stiles Press.

10 Foot Presses assorted.

12 Punching and Shearing Machines, assorted.

2 Return Tubular Boilers, 15 H. P.

1 Vertical " 50 H. P.

1 " Boiler, 25 H. P.

2 No. 2 Hand Milling. Pratt & Whitney.

1 Horizontal Engine, each 25 and 45 H. P.

1 Vertical Engine, 10 H. P.

1 Die Sinking Machine.

1 48-in. Boring and Turning Mill. Pond.

1 48-in. Bradley Hammer.

1 12-in. Shaper, 2 Tables. Betts.

1 No. 6 Root Blower.

1 No. 2 Cutting Machine. Pratt & Whitney.

1 Suspension Drill.

1 each 150 and 400-lb. Steam Hammers. Morgan & Williams.

1 Rogers' Wood Planer, 24 in. x 5 in.

Also full line of New Machinery.

New York Agency TAYLOR, MFG. CO., Engines, Boilers, &c. Correspondence solicited.

PRENTISS TOOL AND SUPPLY CO.,
P. O. Box 3363, No. 41 Dey St., New York City.

FOR SALE.

ONE OF THE OLDEST FOUNDRIES AND MACHINE SHOPS IN SAN FRANCISCO CALIFORNIA

(ESTABLISHED, 1865).

With facilities ample for making all kinds of machinery. The specialties of the works at the present time are Stationary and Compound Engines, Quartz Crushing and Amalgamating Machinery, together with a large line of Castings and Forgings, with the best facilities on the coast for repairing of all kinds. This is an opportunity seldom offered for any one wishing to engage in the Foundry and Machine business. Terms will be arranged to suit purchaser, or an exchange for city country property may be effected. In case of purchasers incorporating, a fair proportion of the stock may be taken in payment, ill-health being the only cause of present proprietor wishing to retire from the business. For further particulars, address L. A. STARR,
217 Fremont St., San Francisco.

For Sale.

Second-hand

DROPS AND LIFTERS.

BEECHER & PECK,

Lock Box 122, New Haven, Conn.

FOR SALE, MACHINERY.

Planer, 24 in. x 24 in., 10 plane 6 ft. New. \$375.

" 27 in. x 26 in. " 8 ft. " \$500.

minn., and at Red wing, Minn. Other rivers which are to be spanned are the Detroit, the Tennessee, the Illinois, the St. Croix, the Kansas, the Yellowstone, the Tombigbee, the Warrior, &c.

Trade Report.

New York Iron Market.

American Pig.—The market has been dull and featureless. Locally the trade has been affected by the possibility of a strike in the foundries, and the general uneasiness created by the labor troubles is forcing consumers of Pig Iron into the conservative course of withholding their contracts. We quote for standard brands, tidewater delivery, \$18 @ \$18.50 for No. 1 X Foundry, \$17 @ \$17.50 for No. 2 X Foundry, and \$16 @ \$16.50 for Gray Forge. Outside brands are 50¢ below these quotations.

Scotch Pig.—Another illustration of the impossibility of forcing sales at anything like fair prices was furnished by the sale of a lot of 200 tons of Gartsherrie on dock at \$18.50. We quote nominally as follows for small lots: Coltness, \$20 @ \$20.50 to arrive; Gartsherrie, \$19.50 to arrive; Shotts and Langloan, \$20.50 to arrive; Carnbroe and Gleggarnock, \$19.50 to arrive; Summerlee, \$20 to arrive; Dal-mellington, \$19 to arrive; Eglinton, \$18 @ \$18.50 to arrive, and Clyde, \$18.50 @ \$19 to arrive. Concessions are made on 100-ton lots.

Bessemer Pig.—We hear of a sale of 5000 tons of Foreign Pig at private terms. We continue to quote Foreign, \$18.75 @ \$19.25, ex-ship, and Domestic Bessemer, \$18 @ \$18.50 at furnace.

Spiegel.—No new business is reported. We quote 2 1/2 % English Spiegel-eisen, \$26 @ \$26.50.

Bar Iron.—Under a small current business the market remains dull and without much strength. The argument of higher cost is frequently advanced, though with little immediate effect. We quote for delivery here in round lots: Common Iron, 1.6¢ @ 1.70¢; Medium, 1.70¢ @ 1.75¢; and Refined Iron, 1.75¢ @ 1.9¢. Store prices are 1.75¢ @ 1.80¢ for Common, 1.85¢ @ 1.90¢ for Medium, and 1.9¢ @ 2.2¢ for Refined.

Structural Iron.—Only small lots are called for, and a considerable percentage of them go to country towns. There have been no sales of large lots of Beams lately, and there are none of any consequence on the market at this time, though there are some ahead. We quote for Angles 1.95¢ @ 2.10¢, delivered, and Tees at 2.35¢ @ 2.40¢ for round lots. Steel Angles are quoted 2.35¢ @ 2.45¢, according to quality. Store quotations remain 2.25¢ @ 2.4¢ for Angles, and 2.6¢ @ 2.7¢ for Tees. American Beams and Channels are 3¢ base from dock for all orders.

Plates.—Some of the mills are again attempting to secure better prices. We quote for round lots: Common or Tank, 2.15¢ @ 2.20¢; Refined, 2 1/4¢ @ 2 3/4¢; Shell, 2.4¢ @ 2 1/2¢; Flange, 3 1/4¢ @ 3 1/2¢; Extra Flange, 4¢ @ 4 1/4¢. For small lots of Steel Plates the quotations are as follows: Ship, 3¢ on dock; Tank, 2 1/2¢ at mill asked; Boiler, 3 1/4¢; Shell, 3 1/4¢; Flange, 4 1/4¢.

Merchant Steel.—Competition in Crucible Tool Steel continues sharp. We hear of sales of good grades at 8¢ in carload lots. Quotations for the range from ordinary to good grades are as follows: American Tool Steels, 7 1/2¢ @ 9¢; Tool Steel of special grades and finer qualities, 12¢ @ 20¢; English Tool, 13¢ @ 15 1/2¢; common grades, 7¢ @ 9¢; Crucible Machinery, 4.5¢ @ 6¢; Round and Flat Spring, 2.6¢; Round-Edge Tire, 2.6¢; Square-Edge Tire, 2.9¢; Toe Calk, 2.7¢; Sleigh Shoe, 2.8¢; Open-Hearth and Bessemer Machinery, 2.8¢, with freight allowance.

Steel Rails.—Very little business has been done by the Eastern Steel works during the past week, and the situation remains practically unchanged. There are, however, some heavy inquiries in the market, some of them extending till next spring. The Western Steel Co., lessees of the old Vulcan Works, at St. Louis, have secured orders aggregating between 9000 and 10,000 tons at \$35.50, which is equivalent to about \$34 at Eastern mill. This concern is not as yet a member of the association.

Steel Wire Rods.—Very little business has been done. Some of the German mills which were booked up to July are again in the market, some of their orders having been canceled. We quote nominally \$40 @ \$40.50.

Old Rails.—We do not hear of a single transaction during the week. Holders both of American and Foreign Old Rails are offering freely at \$20, but are unable to obtain bids better than \$19, and the views of some large buyers are even below that.

Scrap.—The market is dull. We quote nominally \$19.75 @ \$20.

Rail Fastenings.—We quote Spikes, 2.25¢ @ 2.40¢; Angle Fish Bars, 1.75¢ @ 2¢; Bolts and Hexagon Nuts, 2.75¢ @ 3¢.

Metal Exchange.

The following transactions are reported:

FRIDAY, APRIL 16.	
10 tons Tin, June	80.80¢
SATURDAY, APRIL 17.	
10 tons Tin, May	80.05¢
MONDAY, APRIL 19.	
10 tons Tin, May	80.70¢
TUESDAY, APRIL 20.	
65,500 Domestic Spelter	4.50¢

Philadelphia.

Office of The Iron Age, 230 South Fourth St., PHILADELPHIA, April 20, 1886.

Pig Iron.—There is but little of interest to report in the Iron trade, the changes being so trifling as to be barely perceptible. The feeling is a shade better, however, and general confidence is felt that, whatever else may happen, prices cannot vary a great deal. The trifling additions to cost which have been made from time to time, and which cannot now be got rid of, are in the aggregate fully equal to the advance in selling prices, so that makers are no better off than they were when Pig Iron was from \$1.50 to \$2 ton less money. Apart from the necessity for obtaining full quotations to cover cost there is no apparent reason why reductions should be made. Furnaces are sold close up, and the surplus for sale is unusually small, while stocks in consumers' yards are said to be lighter than they have been for a long time past. The absence of demand for forward delivery is the only discouraging feature, although that is not necessarily unfavorable. Consumption has kept up remarkably well, and so long as that can be maintained and accumulation of stocks avoided it matters very little whether deliveries are on old contracts or on hand-to-mouth purchases. Of course confidence is always strongest when order-books are well filled, but it is not at all improbable that renewals will be made quite as soon as makers are ready for them. In other words, it is a "stand-off" on both sides, with nothing to indicate that buyers will secure any material advantage by waiting. At the same time it cannot be denied that the outlook is very unsettled, and until the labor troubles are arranged it is not to be expected that very heavy contracts will be entered into. The chances are therefore that the present range of values will continue until something turns up to break the deadlock. Higher prices and a more active market would undoubtedly have been realized but for the strikes and consequent injury to business, but there is still a feeling of hope in regard to the ultimate outcome, so that sellers show no disposition to discount the future too sharply. The week's business has not been important, but there is no loss of confidence and no change in prices. No. 1 Foundry has sold at from \$18.50 to \$19 at tide, No. 2 at \$17 @ \$17.50, Gray Forge at \$16.50 @ \$18. At the inside figures there is very little for sale; those having good brands to offer, stand out for full prices. Special brands command \$1 @ \$1.50 premium, with very limited offerings. Alabama Irons are available at \$16, \$17 and \$18, ex-ship, but there is very little demand, consumers of that class of Iron being of opinion that there is nothing to be gained by buying in advance of their requirements.

Foreign Iron.—A very considerable amount of Bessemer Pig has been placed since the beginning of the month, including all grades. It is difficult to get at the exact figures, but \$19 @ \$19.25 is supposed to have been about the figures paid for 20,000 tons ordinary Bessemer, and about \$19.75 for large lots, special brands, for Open-Hearth Steel. The demand is now pretty well satisfied, and \$19.50 @ \$20 is quoted for such lots as are inquired for. Spiegel is offered at from \$26 to \$26.75 for 20¢, according to brand, quantity, date of shipment, &c.

Blooms.—There is considerable inquiry, with some sales at about the following quotations, although requirements as to analysis, size, shapes &c., are so varied that only a general idea of the market can be given. Slabs for Nail Plate, \$30 @ \$31 at tide for Foreign and \$30 at mill for Domestic, and from that up to \$35 for higher qualities; special grades for Boiler Plates and other uses requiring high tensile strength, \$36 @ \$39. Other Blooms as follows: Charcoal, \$53 @ \$54; Run-out Anthracite, \$43 @ \$44; Scrap Blooms, \$34 @ \$35, and Ore Blooms, \$35 @ \$36.

Muck Bars.—There is not much doing at present, but prices are fairly steady at about \$28.50 @ \$29.50, according to location of mill, quality of bars, &c. Sales at \$29.50 @ \$30, delivered in Philadelphia.

Bar Iron.—The demand for Bars is only moderate, but mills are working so irregularly that the supply is not in excess of requirements. Specialties of various kinds are in good demand (Skelp Iron particularly), so that there is plenty of work of one kind or another. The supply of Coal is quite inadequate, and as the price is higher, manufacturers naturally try to indemnify themselves by getting an advance on what they may have for sale. Prices are therefore very firm, and in some cases a shade dearer, although the demand is not sufficiently large or urgent to warrant any general change in quotations. For best Refined Bars 1.85¢ @ 1.90¢ is quoted; 1.75¢ @ 1.80¢ for medium quality, and 1.82 1/2¢ @ 1.87 1/2¢ for Skelp Iron.

Plate and Tank Iron.—Without any large amount of business actually placed, the feeling is firmer and expectations of a better demand more generally held. A very large amount of business is in sight, and, although there has been a great deal of disappointment, owing to delays of various kinds, it is thought that there will be an abundance of work for those who can take it at about to-day's prices. For reasons already mentioned, manufacturers feel that prices are too low, and it would not require much increase in demand to lift quotations to 2.20¢ or 2.25¢ for Plate Iron. In the meantime quotations are about as follows:

Ordinary Plate, 2.05¢ @ 2.1¢; Tank, 2.1¢ @ 2.2¢; Shell, 2.5¢; Flange, 3.5¢; Fire-Box, 4.25¢; Steel Plates, Shell, 3.25¢; Flange, 3.5¢; Fire-Box, 4¢.

Structural Iron.—There has not been much new business placed of late, and some of the more important contracts referred to last week and week before are still held in abeyance. There is a probability, however, of quite a nice batch of orders being placed before the end of the month, and sellers are disposed to take a more hopeful view of the position. Meanwhile the mills are all fairly employed and prices held as before, viz: 2¢ @ 2.05¢ for Angles; 2.1¢ @ 2.2¢ for Bridge Plate; 2.4¢ @ 2.5¢ for Tees, and 3¢ for Beams and Channels.

Sheet Iron.—Reports vary considerably. Some of the mills report very little demand for Thin Sheets; others are full of orders for four or five months to come. On the whole it is probably safe to say that a full average business is being done. Some by quoting low have secured large orders; others having a reputation for certain specialties keep their trade at full prices, making what may be called a "mixed market." Prices are firm, but irregular, according to quality, quantity, date of delivery, &c. For small lots, best makes, we quote as follows:

Best Refined, Nos. 26, 27 and 28..... 4¢
Best Refined, Nos. 18 to 25..... 3 3/4¢
Common, 1/4¢ less than the above.
Best Bloom Sheets, Nos. 26 to 28..... 4 1/2¢ @ 5¢
Best Bloom Sheets, Nos. 22 to 25..... 4 1/4¢ @ 4 3/4¢
Best Bloom Sheets, Nos. 16 to 21..... 3 3/4¢ @ 4¢
Blue Annealed..... 3 1/2¢ @ 3¢
Best Bloom, Galvanized, discount..... 60¢
Common, discount..... 65¢

Steel Rails.—A very fair inquiry is reported, both for spot and deferred deliveries. Prices are unchanged, and likely to remain at about present figures for some time to come, as there is nothing likely to influence them either way. Sales at \$35 at mill for early delivery, and from that down to \$34 for winter work.

Old Rails.—There is scarcely any demand, so that prices are not easy to quote with exactness. Probably about \$21 would be the figure for T's, although holders ask a little more, but bids are hard to get except for small lots. A sale of 400 tons Bull Heads has been made, terms not stated, but supposed to be about \$21.

Scrap Iron.—There is not much demand, and, under any pressure to sell, prices readily yield. In ordinary cases prices are about as follows, the outside figures being for lots delivered in buyers' yards, others f.o.b. cars Philadelphia: No. 1 Wrought Scrap, \$20 @ \$22; No. 2 do., \$13.50 @ \$14.50; Turnings, \$14 @ \$14.50; Old Car Wheels, \$15 @ \$16; Old Steel Rails, \$20 @ \$22; Fish Plates, \$23.50 @ \$24.50; Cast Scrap, \$14 @ \$15; do. Turnings, \$10 @ \$10.50.

Wrought-Iron Pipe.—The increasing demand incident to the season has had the effect of strengthening the market and holding prices firm. Sales are not in large quantities, but orders are frequent. Contracts for future delivery are refused, and prices are given only for immediate acceptance, and are very stiff at last week's figures, viz: Discounts for large lots as follows: Lap-Welded Black, 60¢; Butt-Welded Black, 42 1/2¢; Butt-Welded Galvanized, 32 1/2¢; Lap-Welded Galvanized, 42 1/2¢; Boiler Tubes, 55¢.

Nails.—A fair amount of business is reported for the week just closed, but it is still far from satisfactory. Though the weather is more reasonable for building and outdoor work, it is feared the next few weeks will not show any great activity in trade, because of the uncertainty as to the action of carpenters and other mechanics, as the 1st of May appears to be the time fixed for making demands for shorter hours, &c. Already this uncertainty has delayed and in many cases postponed indefinitely projected buildings and improvements which would have consumed large quantities of Nails, and has been a potent reason for restricting the demand. In the meantime, while there does not appear any great effort to force sales by very low offerings, the market is not buoyant, and prices are a little irregular. Quotations are \$2.40 as the store price, with the usual rebate for large lots.

Hardware.—There is considerable variance in the reports of jobbers and manufacturers as to the business received during the week. The trade of those reaching out to the South and West has experienced a shrinkage in the volume of orders, as their travelers report a less hopeful spirit prevailing among the dealers in those sections. Strikes and floods are the reasons assigned for this retrogression. On the other hand business in our own and neighboring States is reported to be growing larger and better. An encouraging feature to be noted is the uniform report that advanced prices are maintained, as also the general feeling that they must go higher on a great many goods. The big advance on Sandpaper made within a few days takes everybody by surprise, but, as the combination has gathered in all the manufacturers, it will have to be accepted as a fixed fact.

Pittsburgh.

Office of The Iron Age, 77 Fourth Avenue, PITTSBURGH, PA., April 20, 1886.

Not much change to note in general business; there has been no improvement the past week, and the prospect for an improvement soon is not as encouraging as it might be. That the labor troubles are having a depressing influence cannot be gained, not only here but throughout the country, and it is affecting all branches of business. As

it appears to be almost certain that the Morrison tariff bill will be defeated, a more cheerful feeling prevails among our manufacturers. Here in Pittsburgh the labor situation remains unchanged. The nailers are still out, and there is apparently but little prospect of their going to work until they are satisfied to accept the scale offered by the manufacturers. The Bellaire factory has given notice to their nailers that they will, after the close of the nail year, June 1, adopt the 17 cent scale, which is the one our manufacturers have been contending for for almost a year. The river coal miners still talk of demanding an advance on the 1st of May, and if they do it is about as certain as anything can be that they will not get it, as the operators say they can scarcely pay the present rate.

Iron Ore.—As the furnaces here are nearly all in blast the consumption of Ore is large, and as some of them are contracted several months ahead there is not likely to be any falling off in consumption. Good Bessemer Ores are in small supply, and are held in more firmness than non-Bessemer. The announcement that Ore freight from the lakes to the furnaces is to be advanced May 1 will cause large shipments this month.

Pig Iron.—There has been no important change in the general position of the Pig-Iron market the past week. Commission men without exception continue to report a light demand as compared with what it was a month or more ago, and, while a weaker feeling has been developed, prices remain unchanged. We hear of consumers who claim that they have been offered Iron at a reduction of from 25¢ to 50¢ ton, but, be this as it may, we are certain that standard brands, particularly of city-made Irons, are held firm at full former prices. Nearly all the furnaces having a reputation for making first-quality Iron are sold ahead and are out of the market for the present. Consumers, owing to the unsatisfactory condition of the market for Finished Iron, are bearish on the raw article, but furnacemen aver that, in view of the recent increase of production, prices should go higher instead of lower. We repeat former quotations:

Neutral Gray Forge..... \$16.25 @ \$16.75, 4 mos.
All-Ore Forge..... 17.50 @ 18.00, 4 "
White and Mottled..... 15.00 @ 15.50, 4 "
No. 1 Foundry..... 18.00 @ 18.50, 4 "
No. 2 Foundry..... 17.00 @ 17.50, 4 "
Foundry, Charcoal..... 20.00 @ 20.50, 4 "
Cold-Blast Charcoal..... 24.00 @ 27.00, 4 "
Bessemer Iron..... 19.50 @ 20.00, 4 "

There have been no sales of Bessemer Ore reported for some time, and there is but little offering, as nearly all the furnaces having a stock of Bessemer Ore are sold ahead, and the market may be quoted firm at our quotations.

Muck Bar.—Continues exceedingly dull, and in the absence of sales we quote nominally at \$27.50 @ \$28, cash. On rates quoted there is no margin for profit at present price of Pig Iron.

Manufactured Iron.—The general condition of the Finished trade remains much the same as a week ago. Manufacturers generally continue to complain that business is light for the season, and with a light demand it is impossible to obtain remunerative prices. Some of the mills making a specialty of Bridge, Structural and Skelp Iron are pretty fully employed on contracts made some time ago, but the Merchant Iron mills are not crowded by any means, and, judging from present indications, are not likely to be soon. Various causes have transpired within the past few weeks to unfavorably affect the market, none more so than the labor troubles, which exert a most depressing influence. Prices are weaker, but for first quality Iron we continue to quote on a basis of 1.70¢ @ 1.75¢ for Merchant Bars. Old Rail Iron can be sold at a decline, as there has been a reduction within a few weeks of from \$2 to \$3 ton on the price of Old Rails.

Nails.—There is nothing here except in a retail way, nor is it to be expected while all the machines are idle, as has been the case for over 10 months. Manufacturers aver that they cannot do better than the 17¢ scale and compete with Eastern Nails, where the cost of labor is so much less. The meeting of the Western Nail Association at Wheeling last Wednesday did nothing of public interest except to reaffirm the former position of the association in regard to the strike. The secretary of the association reports 1055 machines in operation west of Pittsburgh non-uniform.

Wrought-Iron Pipe.—The mills are all busy, and in addition to the large requirements for natural-gas companies the regular merchant trade is improving. The regular monthly meeting of the manufacturers took place here last Thursday, but there was nothing done excepting to reaffirm former prices, which are firmly adhered to; some manufacturers continue to contract for future delivery at present rates. Discounts on Black Butt-Welded Pipe, in carlots and upward, 45¢; less than a carload, 42 1/2¢; Galvanized do., in carlots, 35¢; less than a carload, 32 1/2¢; Black Lap-Welded, in carlots, 62 1/2¢; less than a carload, 60¢; Galvanized do., in carlots, 45¢; less than a carload, 42 1/2¢; Boiler Tubes, 55¢ off regular list; 2-inch Oil-Well Tubing, 13¢ ton, net; 5 1/2-inch Casing, 40¢; 8-inch Drive Pipe, \$1.30.

Steel.—There has been no important change in the market for Merchant Steel. Business is only fair, but an improvement in demand is not improbable in the near future. Standard brands of Refined Cast Tool Steel, 8¢ @ 9¢; Crucible Machinery, 3 3/4¢ @ 4¢; Open-Hearth do., 2 1/2¢ @ 2 3/4¢;

Boiler Plate, 4¢ @ 4 1/2¢, as to quality, &c.; Bessemer Blooms and Billets, \$31 @ \$34 ton. We can report a sale of 1000 tons Bloom Ends at \$22, cash. Crop Ends quotable at \$22.50 @ \$23.

Old Rails.—Continue dull, and while prices remain unchanged the demand is almost wholly of a hand-to-mouth character, buyers buying only as immediate actual necessities require, from which it is evident that they are apprehensive of still lower prices. We can report some small sales for immediate delivery at \$22 for Old Iron and \$21 for Old Steel. Future deliveries, it is intimated, can be bought below prices quoted.

Railway Track Supplies.—There is a fair business at unchanged prices. Spikes, 2.40¢, 30 days, delivered; Splice Bars, 1.70¢ @ 1.75¢; Track Bolts, 2.75¢ with Square and 2.85¢ @ 3¢ with Hexagon Nuts.

Steel Rails.—There has been less inquiry the past week or two, but the two mills here have all they can do for several months to come, and prices are still quoted firm for Heavy Sections at \$36 @ \$36.50, cash at mill.

Old Material.—Dealers in all kinds of Iron Scrap report business as being dull, very dull, but that prices remain unchanged. No. 1 Wrought is quoted at \$19 @ \$20 net ton; Wrought Turnings, \$14 @ \$15; Car Axles, \$24 @ \$25; Cast Boring, \$12, gross ton; Old Car Wheels, \$16.50 @ \$17, gross.

Chicago.

Office of The Iron Age, 36 and 38 Clark St., Cor. Lake St., Chicago, April 19, 1886.

Hardware.—The mild, pleasant weather has greatly stimulated trade. During last week jobbers had all they could comfortably do. Orders for Shelf and Building Hardware came in freely, buyers anticipating their wants more than for some weeks past. Thus far April trade in the aggregate is larger than a year ago. In the general routine of business there is nothing of an unusual or interesting character. Prices are noted as being a trifle weaker on the whole line, but no extreme cutting is reported except on Tacks, for which there is no regular price. The demand for Heavy Hardware, Blacksmiths' Tools, Tinner's Tools and Supplies, Wagon and Carriage Wood Stock is slowly increasing. Railroad Supplies are in fair request, but only in small lots. There is a better demand for Chains, Heavy Saws and Ship Chandlery. Wire and Hemp Rope, Tackle Blocks and Builders' and Miners' Specialties are more active, with prospects of a much better trade.

Barb Wire.—Buyers are not placing orders for large lots, and the small sales do not amount in the aggregate to anything like the quantity expected. This lack of demand is beginning to puzzle both jobbers and makers, but has not up to the present time (so far as we can learn) had any effect on prices. The uniform quotation continues to be 4¢ on Painted Wire and 4 1/2¢ on Galvanized in small lots, 1/2¢ off in carload lots. The secretary of the association says that he has received information from all parts of the West, and believes that quoted prices are adhered to by all makers and jobbers. It was rumored that some weakness had been discovered at St. Paul, but jobbers here claim to know nothing of concessions having been made.

Nails.—The market has recently become badly broken, and jobbers vary so much in their quotations that one can scarcely determine what a uniform selling price would be. From store we hear of Iron Nails being quoted from 2.35¢ to 2.45¢ in small lots. In carload lots they are offered by some dealers at the lower figure, while others would shade the price at least 5¢ keg. Steel Nails are quoted at 2.60¢ keg in small lots from store, and 2.55¢ in carload lots. It is possible that these figures can be shaded, as consumers are unwilling to pay more than 15¢ additional for Steel Nails over the price of Iron. It is said that there have been more sellers of Nails in this market during the past week than during any other one week this season, and to the makers of Nails may be attributed the weakness and irregularity which now exist in the market. The season is pretty well advanced and jobbers are not inclined to take large stocks at the present condition of trade. Mills are evidently carrying considerable surplus stock, or else are exceedingly anxious to secure work during the summer months. Their effort to obtain orders has shaken the confidence of buyers, and they are now less disposed to place orders for forward delivery than they were several weeks ago. Presumably stocks in this market are light, but as manufacturers have recently supplied pretty much all the small jobbers throughout the West at factory prices, the large dealers here will not require heavy stock. Some of the houses say that they are only handling them as a matter of convenience to their customers, and make no effort to sell Nails unless accompanied with an order for other goods.

American Pig Iron.—The feeling is much the same as a week ago. The market has no buoyancy. Buyers appear to be in an apathetic mood as a class, and expect inducements to purchase. Most of the trading is done in small lots, as the majority of those who are in need of Iron are unsettled about anticipated labor troubles. In many cases the consumers' wants are subject to those conditions. If there is no strike and wages are not materially affected by the

eight-hour movement they will want large lots of iron, but do not feel like buying now. In some cases large manufacturing establishments intend shutting down about the last of the month until the movement takes different shape, thus avoiding a strike and ill-feeling. This state of things enters so largely into the Pig-Iron market that it is really the controlling feature. There are nevertheless a few buyers left who are not unnerved and who believe that, whatever the results may be, there cannot be any great reductions in the price of iron. These are quietly placing their orders for round lots. One such sale was made two weeks ago and about 5000 tons. When the aggregate sale of small lots is added to these large blocks the increase of stocks in furnace yards is not so great. On the surface the market is not firm on any class of iron, but an attempt to buy largely will show that the bottom is very near to the top figure. Many offers are made by sales agents on small lots as "feelers," but if the buyer wanted to take 100 tons he would find it difficult to shade the price more than 50¢ per ton. The fact that there is so little buying makes sellers anxious, and they begin to scurry around to see what can be done, which creates the opinion among consumers that the market is going to sticks. Of this at the present time there is no assurance. Makers of good brands of Pig Iron are holding quite steady, considering the adverse influences. As small lots are sold so close to bottom prices, we change quotations on carlots Lake Superior Charcoal to \$21 for Nos. 1 and 2, and in 100-ton lots to \$20.50. Some of the higher numbers which are scarce would command 50¢ per ton advance on these prices. Makers of Coke Irons are holding their figures pretty firm at \$19.50 for No. 1, and \$19 for No. 2. Cinder Mixed is quoted at \$18.50 @ \$19; Ohio Standard Blackband Irons range from \$20 to \$21, the Briar Hill Co. still refusing to accept less than the top figure. For Southern Irons there is scarcely a market by which prices can be determined. Nominal quotations continue to be \$18.50 for No. 1 Foundry, \$18 for No. 2, and \$17.50 for No. 2½. These figures are about the same as those quoted in other markets nearer the base of supplies, and are really less than a sales agent would quote when he thought there was no chance of making a sale. Upon the other hand buyers say that they are 25¢ @ 50¢ per ton higher than figures at which the best Irons have been offered. There is no prospect that the present condition of the market will be altered for some weeks, and may extend into the latter part of May. There is a hopeful view entertained that after that time business will settle down into its normal channels, and that the market will revive into activity and give opportunity for better prices and less hard work to make sales.

Merchant Steel.—The demand for the better grades was tolerably fair during the past week. Tool Steels, Drill Rods and specials have sold in larger quantity. The demand for ordinary and common grades has fallen off slightly, and what sales were made consisted principally of material for repair orders from railroads and other large manufacturers. Scarcely any specifications for new work are being sent in, and there appears to be the same inclination among country merchants to withhold all orders for stock that will not be required until next month. We renew the following quotations as nominal prices: Tool Steel, ordinary grades, 7½¢ @ 8½¢; Extras, 13¢; Specials, 16¢; Open-Hearth and Bessemer Spring Steel (standard brands), 2½¢; Flat Machinery, 2½¢; Round do., 3¢; Crucible Machinery, 4½¢; Crucible Cast Plow Steel, 4½¢, and Patented Plow Steel, 5½¢.

Steel Rails.—Nothing of importance has occurred in the Steel-Rail market. No larger orders have been placed, and inquiries are, if anything, less than they were a week ago. Makers continue to quote \$35, first quality, and \$34.50 for seconds.

Bar Iron.—Makers and jobbers of the best grades of Bar Iron report that they are having quite an active trade, and that they have a little surplus, as their prices are 1¢ higher than for other grades offered in the market. Best Refined New Puddled is quoted at 1.85¢ rates, in small lots from store, and 1.80¢ rates in carload lots. For stocks shipped direct from mill on good specifications the latter price would be shaded to 1½¢. They claim to be holding right up to these figures and state that their trade is apparently increasing all the time. During the week railroads and country merchants have anticipated their trade slightly more than for several weeks previous, and the aggregate thus far for April is considerably in advance of last year's sales. On low-grade Iron, Old Rail stock, prices are weak and the market very irregular. On sales from store 1.75¢ @ 1.80¢ rates are quoted in small lots, and 1.65¢ in carload lots. Makers of this class of Iron have difficulty in finding buyers enough to absorb their product, and are seeking to place orders with small consumers. Where specifications are favorable in such cases, and they require the work, they sell at about the same price as jobbers here have to pay.

Old Rails.—The position of manufacturers of Bar Iron necessarily weakens the market for Old Rails. There is considerable inquiry for stock at prices ranging from \$19 to \$20. Those who have Rails to sell are asking \$20.50 @ \$21, buyer and seller being

from 50¢ to \$1 apart, according to quantity. No large sales are reported during the week. Steel Rails are quoted at \$19, Chicago delivery. The has been no improvement in the demand recently.

Structural Iron.—Inquiries are quite frequent for Beams to be delivered on condition that everything moves off smoothly in connection with the different classes of labor. Those who carry stocks in yards here have consequently taken steps to increase their supply, in the hope that there will be an active demand next month. At present all buildings are held in abeyance awaiting developments, except for such as will be pretty well advanced before the close of the month. The demand for small lots from yard has been fairly good. Bridge material has been in good request, and material for several large structures will likely be in demand very soon. Makers of Structural Shapes are pretty well employed at present in furnishing material on contracts made some time ago for large buildings that are now being pushed vigorously toward completion. Prices remain at former quotations.

Galvanized Iron.—The market is subject to the same influence as that of Building Material, and consequently trading is nearly all in small lots. Makers of the better grade of Iron are running full, and are filling their warehouses with large stocks in anticipation of the demand that will likely spring up very suddenly later on. Prices are held pretty steady as a rule, and quite firm on the better quality. There is a slight weakness on the cheaper grade of Iron, but jobbers continue to quote 60¢ off on Juniata and 60 and 10¢ off on Charcoal.

Black Sheets.—It is said that makers are looking after orders more sharply than some time ago. Good quality is selling quite freely from store, while the demand for the cheaper grades continues slow. Most of the Iron that is now being sold is of that quality suitable for stamping, on which we hear of no new concessions. From store jobbers are now quoting on No. 24, 2.80¢; Nos. 25 and 26, 2.90¢, and No. 27, 3¢.

Old Wheels.—Market very dull, there being scarcely any demand, and what there is at figures so much below prices asked by holders that sales are not frequent. Holders are asking \$16.50 @ \$17, and it is possible that sales have been made at \$16, which is about all that buyers feel inclined to offer.

Scrap Iron.—Buyers are less urgent in their demands, and consequently offering lower figures. Sellers are quoting \$18.50 @ \$19 for No. 1 Wrought, but where they have large stocks would perhaps shade this figure. On No. 1 Mill they quote \$14, and \$9 on No. 2. Car Axles are held at \$21 and Horse Shoes at \$22.50; Steel Tires and Wagon Springs are quoted at \$13.50; Plow Steels, \$10.50 and weak. There seems to be a probability that the whole line of Old Material will have to decline before the close of the month to induce buyers to place orders in the present condition of the market for new material.

Pig Lead.—The market for the past week developed unexpected weakness, which, like on all other lines, is credited to the labor troubles, but more probably the results of manipulation by speculators. It is said that there is no visible increase in the supply, and that there is no stock except in the East. Sales of some 600 tons are reported for the week, ranging in price from 4.70¢ down to 4.60¢. The latter figure is regarded as present market value, but not firm. The tumble in price has disconcerted buyers, and sales are now hard to make.

Birmingham.

BIRMINGHAM, ALA., April 19, 1886.
The marks of the great floods do not disappear from the face of business as rapidly as could be desired. Generally merchants' sales are in very uncertain relation to the usual promises of the season. Railroad traffic, too, is irregular in movement, as well as a little light in bulk, on most of the roads, after proper allowance is made for the rush of delayed freights. Inadequate equipment for emergencies like the present is one of the main troubles with the railroads, however. All sorts of business here and further South are complaining of lack of cars even for the ordinary run of trade. In the matter of better transportation facilities generally assurance has been added to assurance of late. The Kansas City, Fort Scott and Gulf Railroad Line from here to Memphis has been chartered, the chief engineer has arrived here, engineer parties are making final surveys, trades have been made for moving outfits and supplies, and ground has been secured in this city for a freight depot. Nearly everything has been done indeed short of a beginning of actual building. It is said of the Georgia Pacific extension westward that broken ground is to be seen on almost every mile of the line.

Pig Iron.—Market quiet. The railroads are taking freights for all sections again, but the labor troubles are still practically keeping Iron out of the West. So far as can be ascertained St. Louis and other Missouri points are the heaviest buyers in that direction, though the whole volume of business with the North and West is still small, comparatively. The feeling among manufacturers here, leaving the strikes and floods out of the question, is comfortable enough. They all seem to expect very satisfactory business in the near future. Actually,

though, according to their accounts, the market all around is some 25¢ lower than it has been.

Finished Iron.—Prices do not seem to vary much, and there is no apparent increase of the demand, which is evidently a little short of what it was at the first of the year. The Birmingham mills, however, do not seem to suffer for orders. Their Bar mill, which was stopped some three weeks for repairs, now has to do a double turn to catch up with its business.

Cast Pipe.—The stoppage of chance business from the South by the high waters has put the Birmingham Iron Works in the market again on almost all sizes of Pipe. They report a rather quiet market, with prices irregular, and on the whole rather unsatisfactory.

Miscellaneous.—Both in repairs and manufactures some good business has been booked by the smaller Iron enterprises here in the last week, and there is a good volume of inquiry all the time. Some of the shops are running at night for the first time in their history. One foundry now runs all night.

Coal and Coke.—Although quiet, are behind in delivery. The shortage of cars has come to be quite serious in their case. The demand, too, is for the time being considerably behind the supply—a fact the more notable with reference to Coke, because it is a recent thing.

Lumber.—Cannot be delivered by the railroads, crippled as they have been of late, as fast as it is wanted. There is a brisk demand.

Cincinnati.

APRIL 19, 1886.

Pig Iron.—Reports from the West, Northwest and from local consumers show that a plentiful supply can be secured for both present and future uses at about present quoted prices. Dealers report about the usual volume of trade and encouragement that a healthful condition will obtain through the year. Quotations of reported sales and offers in the past week:

Charcoal Foundry	
Tennessee, Alabama and Georgia, No. 1, 4 mos.	18.50 @ 19.50
Tennessee, Alabama and Georgia, No. 2, 4 mos.	17.50 @ 18.00
Hanging Rock, Best, No. 1, 4 mos.	21.00 @ 21.50
Hanging Rock, Good, No. 1, 4 mos.	20.00 @ 20.50
Hanging Rock, Good, No. 2, 4 mos.	19.50 @ 20.00
Coke Foundry	
Ohio and West Pennsylvania, No. 1, 4 mos.	17.50 @ 19.25
Ohio and West Pennsylvania, Bessemer No. 1, 4 mos.	20.25 @ 21.00
Ohio and West Pennsylvania, Bessemer No. 2, 4 mos.	16.00 @ 18.50
Southern, No. 1	No sales.
Southern, No. 2	17.50 @ 18.00
Silver-Gray Softeners	
Ohio, No. 1, 4 mos.	18.00 @ 19.00
Ohio, No. 2, 4 mos.	17.00 @ 17.50
Ohio, No. 3, 4 mos.	16.00 @ 16.50
Other makes and grades	15.00 @ 15.50
Car-Wheel	
Hanging Rock Cold-Blast, 4 mos.	25.00 @ 26.50
Hanging Rock Warm-Blast, 4 mos.	21.00 @ 21.50
Southern Warm-Blast, 4 mos.	18.00 @ 20.00
Southern Standard Warm-Blast, 4 mos.	23.00 @ 25.00
Forge	
Sales various makes, reported	15.00 @ 18.00

Scrap.—No sales Wheels or Rails reported; other grades reported active and firm in prices. Above quotations are f.o.b. cars here, or less freight to Cincinnati when orders are filled direct from furnaces; 35¢ @ 50¢ per ton discount from time prices for cash.

Louisville.

W. B. BELKNAP & Co., Louisville, write as follows, under date of April 19: Seasonable weather for the past week, sunshine and showers, true to the month, have contributed to partially restore trade to its normal proportions, but there is no longer the vim to it that was to be noticed earlier in the season. In fact, everybody has been disappointed, not so much at the volume of the spring trade as in the lack of tone to the market. We think the trouble is the result mainly of the strikes all over the country, but more especially in the Southwest, which have proceeded so far as to secure the recognition of Congress. It looked last winter as though the spring would see large and healthy investments of capital, and that meant plenty of work for manufacturers and artisans, too. Timidity now seems to be the order of the day. Capitalists have crawled into their shells and shut the door after them. When confidence shall be fully restored, and the laws of the land promptly and fearlessly executed, then will enterprise start up again.

Bar Iron.—Is quiet and not over-strong. The stock argument of having paid more for raw material and advance of labor, &c., has become rather dreary, and is of no effect. The fact is that there is no such thing as forcing sales; there is no speculation whatever in the atmosphere. Other kinds of Iron are about in the same fix as Bar, nothing special to be said on any account. The manufacturers of Hoops who use gas exclusively claim to be getting much higher grade product in tensile strength and finish than those who work by the old methods.

Steel.—Common grades of Steel seem to be holding their own with commendable tenacity. The classification of these, but more particularly Cast Steel, continues to mystify salesman and purchaser. It does seem as though the list could have been materially simplified if it had to be slightly enlarged, which would be no objection.

Nails.—Notwithstanding the fact that we are right in the season of active consumption, the Nail market has failed to hold its own, and prices are on a slightly lower basis than 30 days ago of both Iron and Steel.

Wire.—There has been a good demand for Barbed Wire, as was predicted after the floods. Buyers are taking hold quite freely

of what they want, but, owing to the fact that prices are not expected to advance, no large contracts are on foot. The fact that the market has reached this condition early in the season leads us to cherish the hope that it will recover correspondingly early, and if nature comes to time with the bountiful crops that seem in prospect there will be a fair, even trade throughout the summer months.

GEORGE H. HULL & Co., of Louisville, report to us, under date of April 20, as follows: The market for Pig Iron shows some change since our last report. There are more inquiries, but they are for small lots, and sales made have established a decline in price, and we revise quotations accordingly. Some furnaces that are sold up for several months to come still hold their prices at our outside quotations, but those that are accumulating Iron are offering to sell at inside figures, and, of course, sales booked are principally by the last-named class. The entire volume of sales, however, is small, much smaller than the dull period of any time last year. This, of course, is not to be wondered at when we take into consideration the unsettled condition of business caused by the strikes, and the very large volume of sales made during the last three months of 1885. The actual deliveries of Iron on old contracts from week to week are probably equal in volume to any time last season. Many consumers, however, are running light, and deliveries are in excess of their requirements and capacity to consume. This has occasioned a desire on the part of some to resell the surplus, which is hard to do at the present time; others are storing their Iron or arranging with furnaces to postpone deliveries. Altogether, there is no very bright prospect for prices in the immediate future. We quote for cash, in round lots, as below:

Pig Iron	
Southern Coke, No. 1 Foundry	\$17.50 @ \$18.50
" " " " " "	16.50 @ 17.00
" " " " " "	16.00 @ 16.50
Hanging Rock Coke, No. 1 Foundry	17.00 @ 18.00
Hanging Rock Charcoal, No. 1 Foundry	19.00 @ 20.00
Southern Charcoal, No. 1 Foundry	18.00 @ 19.00
Silver Gray, different grades	15.00 @ 16.00
Southern Coke, No. 1 Mill, Neutral	15.50 @ 16.00
" " " " " "	14.50 @ 15.00
" " " " " "	15.00 @ 15.50
" " " " " "	17.00 @ 17.50
White and Mottled, different grades	13.00 @ 14.00
Southern Car-Wheel, standard	25.00 @ 26.00
Southern Car-Wheel, other brands	21.00 @ 22.00
Hanging Rock, Cold-Blast	26.00 @ 27.00
" " " " " "	21.00 @ 22.00

Old Material.—The market for Old Material, in sympathy with the general trade, is very dull, and concessions on the quoted prices would have to be made to effect sales. We know of no considerable sales, however, that would justify any material change in prices. We quote for cash as below:

Rails, 7 ton	\$39.50 @ \$21.50
Wheels, 7 ton	14.00 @ 15.50
No. 1 Wrought, 100	.80 @ .90
No. 1 Country Wrought, 100	.70 @ .80
No. 2 Country Wrought, 100	.60 @ .70
No. 1 Cast, 100	.45 @ .55
Boilers, cut, 100	.60 @ .65
Boilers, uncut, 100	.40 @ .45
Flues, Tanks and Sheets, 100	.50 @ .55
Burned Scrap and Sheets, 100	.30 @ .35
Axles, 100 lb	.90 @ 1.00

Coal Market.

An agreement upon the very moderate allotment of 2,000,000 tons for May's output, at a meeting of the Anthracite trade on Tuesday, against 2,400,000 tons for May last year, and talk about a further advance in prices May 1, is spoken of in Coal circles with complacency. One of the Coal presidents says there will be an advance, but how much cannot be told. Trade is considered in a very fair condition, although there is comparative little new business. It seems probable that, owing to the increased demand for Anthracite growing out of the stoppage of Bituminous, the large accumulation at shipping ports is being somewhat reduced. The improvement, however, is wholly in Steam sizes, the Domestic being inclined to drag. In behalf of manufacturers the remark is volunteered by a heavy producer that, while the general idea may be to realize eventually about \$4 per ton as an average all round, there is no disposition to crowd those who need Coal for steam purposes. Pea Coal is firmer. We quote: Free-Burning Stove, on board, \$3.25; Broken and Egg, \$2.85; Lehigh Broken and Egg, \$3.25 @ \$3.50; Pea, \$2.25, alongside. The total amount of Anthracite mined thus far in the year 1886 is 8,420,217 tons, compared with 6,520,688 tons for the same period last year, an increase of 1,899,529 tons.

The Bituminous trade is still blocked by the wages dispute, no concession having been made on either side. Cumberland Coal is practically out of the market, although a single lot of 200 or 300 tons was sold in this city on Tuesday at \$4.50 per ton. Transactions are confined to those who are compelled to buy. One cargo of foreign Bituminous is now in port.

John H. Jones furnishes the following statement of the Anthracite Coal tonnage for March, 1886, compared with the same month last year:

	March, 1886.	March, 1885.	Difference.
Reading Railroad	929,328	688,087	Inc. 241,241
Lehigh Valley R.R.	534,341	361,276	Inc. 173,065
Del. Lack & West'n	64,823	365,971	Inc. 181,148
Del. & Hudson Canal Co.	326,499	190,505	Inc. 135,994
Pennsylvania R.R.	282,197	377,431	Inc. 95,234
Pennsylvania Coal Co.	114,141	98,315	Inc. 15,826
N. Y., L. E. & West'n	67,500	49,210	Inc. 18,290
Total	2,759,391	2,065,799	Inc. 733,591

Statement showing general distribution of entire production of Anthracite Coal year ending December 31, 1885: To Pennsylvania, New York and New Jersey, 21,132,179 tons; to New England States, 5,172,964 tons; to Western United States, 3,029,385 tons; to Southern States, including Delaware, Maryland and the District of Columbia, 1,362,500 tons; to Pacific Coast, 10,700 tons; to Dominion of Canada, 878,177 tons;

to foreign ports, 37,624 tons; total, 31,623,529 tons.

Representatives of the Western Anthracite trade, at a meeting in this city, arranged the opening prices for spring at Buffalo, Erie and the Niagara River bridges as follows per gross ton:

	On cars.	F.o.b.
Grate	\$4.00	\$4.30
Egg	4.00	4.30
Stove	4.25	4.55
Chestnut	4.25	4.55

The Lake shipping season is now open. The Central Coal Co. this week remove to the Washington Building.

Exports.

The following list embraces the Exports of Hardware, Machinery, Iron, Metals, &c., from the port of New York, for the week ending April 20, 1886:

Dutch West Indies.			Cuba.		
	Quan.	Val.		Quan.	Val.
Clocks, ca.	3	24	Mach'y, pkgs.	7	156
Hdw., ca.	5	27	Mf. iron, pkgs.	301	1,977
Pumps, pkgs.	1	35	Clocks, ca.	1	21
Nails, kegs.	0	25	Pumps, pkgs.	4	165
W. rope, coils	4	35	Packs, ca.	1	36
Dutch East Indies.			Tin plates, bxs.		
Rifles, ca.	1	82	Cutlery, ca.	49	1,502
Cartridges, ca.	4	240	Hdw., ca.	87	835
Copenhagen.			Ag. imp. pkgs.		
Mach'y, pkgs.	2	220	Copper, sheet	1	67
Hdw., pkgs.	7	407	Tinware, ca.	5	60
Ag. imp. pkgs.	45	1,230	Iron tubes	50	147
Christiana.			Nails, kegs.		
Ag. imp. pkgs.	80	7,100	Cartridges, ca.	2	54
Hdw., pkgs.	30	200	Tin foil, bxs.	1	60
Hamburg.			Porto Rico.		
Hdw., pkgs.	384	8,831	Ag. imp. pkgs.	7	83
Sew. ma., ca.	1,127	22,065	Pumps, pkgs.	1	20
Pumps, pkgs.	2	65	Mf. iron, pkgs.	40	142
Valves, ca.	10	110	Hdw., ca.	8	82
Guns, ca.	5	540	Iron tubes	45	39
Ag. imp. pkgs.	767	10,950	San Domingo.		
Clocks, pkgs.	2	76	Mf. iron, pkgs.	32	583
Firearms, ca.	9	2,122	Hdw., ca.	11	234
Mach'y, pkgs.	39	3,400	Cutlery, ca.	2	21
Mf. iron, pkgs.	8	55	Sew. ma., ca.	3	64
Wringers, ca.	6	150	Clocks, ca.	4	41
Valves, bxs.	9	804	Mach'y, pkgs.	7	70
Bremen.			Nails, kegs.		
W. wheel	1	200	Ag. imp. pkgs.	5	92
Tacks, ca.	1	18	Pumps, pkgs.	4	26
Pritz presses, pkgs.	19	410	Hayti.		
Mach'y, pkgs.	8	337	Sew. ma., ca.	1	32
Mf. iron, pkgs.	19	360	Nails, kegs.	3	32
Ag. imp. pkgs.	10	512	Hdw., ca.	120	800
Danish West Indies.			Nails, bxs.		
Nails, bxs.	7	28	Pumps, pkgs.	2	86
Cutlery, ca.	2	30	Mf. iron, pkgs.	4	41
Nails, kegs.	25	67	Mexico.		
Mf. iron, pkgs.	62	948	Nails, kegs.	41	106
Tinware, ca.	1	18	Iron, pkgs.	40	60
Amsterdam.			Cartridges, ca.		
Sadiron, ca.	11	143	Firearms, ca.	26	830
Hdw., ca.	3	115	Percussion caps, ca.	1	26
Pumps, pkgs.	9	577	Tinware, ca.	1	17
Ag. imp. pkgs.	26	688	Cutlery, ca.	116	1,751
Antwerp.			Hdw., pkgs.		
Sew. ma., ca.	110	1,237	Mach'y, pkgs.	49	1,045
Revolvers, ca.	1	1,070	Ag. imp. pkgs.	6	228
Pumps, pkgs.	37	1,000	Sew. ma., ca.	55	908
Hdw., ca.	5	98	Mf. iron, pkgs.	318	1,908
Iron drums	24	240	Clocks, ca.	6	111
Firearms, ca.	5	530	Pumps, pkgs.	4	300
Ag. imp. pkgs.	317	5,550	Tacks, ca.	7	39
London.			Pencicula.		
Hdw., ca.	154	8,607	Hdw., pkgs.	39	459
E. cartridges	3	92	Mf. iron, pkgs.	30	177
Ag. imp. pkgs.	5	1,085	Nails, kegs.	4	94
Firearms, ca.	123	45,490	Wat. closets, pkgs.	4	67
Water wheel	1	875	Mach'y, pkgs.	4	139
Pumps, pkgs.	4	160	Nails, kegs.	11	284
Sew. ma., ca.	719	12,742	Iron, bds.	202	26
Copper, ca.	3	174	Sew. ma., ca.	52	1,282
Bullets, ca.	1	25	Tinware, ca.	1	238
R. rollers, ca.	1	67	Mf. iron, ca.	2	149
Cartridges, ca.	754	10,840	Plumb.	2	72
Mach'y, pkgs.	91	11,015	Liberia.		
Glasgow.			Mf. iron, pkgs.		
Hdw., ca.	63	1,490	Mach'y, pkgs.	91	481
E. milk.	0	300	Steel, pkgs.	1	106
Ag. imp. pkgs.	18	421	Brass kettles	1	106
Hdw., ca.	29	331	Nails, kegs.	1	109
Mf. iron, pkgs.	7	1,375	Sew. ma., ca.	5	28
Oil, zinc, bds.	100	788	Hdw., pkgs.	18	247
Liverpool.			Spanish Possessions		
Mf. iron, pkgs.	24	2,021	In Africa.		
Hdw., pkgs.	59	8,605	Ag. imp. pkgs.	30	170
Clocks, pkgs.	12	135	Tinware, ca.	1	29
Saw, ca.	336	6,162	Nails, kegs.	1	294
Pumps, pkgs.	1	55	Clocks, pkgs.	16	326
Mach'y, pkgs.	50	5,545	Hdw., ca.	1	31
bag.	9,977	50,000	Mach'y, pkgs.	21	857
H'p iron, bds.	54	152	United States of Colombia.		
Sew. ma., ca.	196	3,810	Cutlery, ca.	56	1,743
Castings, ca.	1	100	Mach'y, pkgs.	304	7,786
Copper, ca.	1	100	Nails, kegs.	103	1,474
Ag. imp. pkgs.	163	1,361	Shot, packs.	59	147
Guns, ca.	1	138	Tinware, pkgs.	21	658
Windmill, ca.	1	125	Steel, pkgs.	96	1,432
Hull.			Nails, kegs.	12	427
Hdw., pkgs.	34	662	Clocks, pkgs.	12	427
Pumps, pkgs.	24	579	Revolvers, ca.	8	630
Ag. imp. pkgs.	51	836	Tanks, pkgs.	78	873
Clocks, pkgs.	23	433	Mf. iron, pkgs.	335	2,770
Leith.			Nails, kegs.	13	840
Hdw., pkgs.	2	75	Ag. imp. pkgs.	5	501
Guns, bds.	1	50	Nails, kegs.	96	801
Canada.			Nails, ca.	17	157
Mach'y, pkgs.	1	45	Copper, ca.	1	28
Newfoundlnd.			Iron, ca.	101	118
Hdw., ca.	15	35	Cartridges, ca.	6	111
Ag. imp. pkgs.	10	70	Quick'ly, flks	30	858
Nova Scotia.			Water-wheel.	1	123
Tin, pkgs.	71	470	Mf. copper, ca.	1	259
Clocks, ca.	3	45	Marcellis.		
British Guiana.			Iron drums.	330	1,940
Hdw., pkgs.	8	56	Central America.		
Pumps, pkgs.	1	96	Clocks, ca.	2	38
Tinware, ca.	1	28	Iron, pkgs.	16	24
Leghorn.			Mach'y, pkgs.	1	107
Firearms, ca.	4	400	Sew. ma., ca.	90	1,838
British West Indies.			Nails, ca.	1	14
Mf. iron, pkgs.	83	748	Riflery, ca.	101	303
Hdw., ca.	38	505	Printing pr's	1	350
Nails, kegs.	135	447	Hdw., ca.	35	661
W. mill, pkgs.	9	217	Ag. imp. pkgs.	2	82
Springs, ca.	1	40	Spikes, kegs.	23	610
Sew. ma., ca.	79	1,315	Mf. iron, pkgs.	133	978
Ag. imp. pkgs.	7	851	Yel. met, ca.	1	54
Guns, ca.	1	35	Nails, kegs.	17	45
Blower, ca.	1	58	Iron, ca.	8	140
Springs, ca.	1	53	Percussion caps, ca.	1	50
Mf. copper, ca.	1	72	Shot, ca.	7	108
Tacks, ca.	1	33	Brazil.		
Cutlery, ca.	1	16	Sew. ma., ca.	10	175
Cartridges, ca.	12	294	Locomotives.	2	16,239
Mach'y, pkgs.	5	116	Ag. imp. pkgs.	23	410
Tinware, ca.	17	352	Cutlery, ca.	30	355
Haere.			Nails, kegs.	50	190
Hdw., ca.	10	1,075	Car-wheel.	100	570
Ag. imp. pkgs.	48	1,166	Hdw., ca.	27	1,031
Pumps, pkgs.	11	1,000	Naples.		
Sew. ma., ca.	1	100	Pump, ca.	1	100
Mach'y, pkgs.	7	750	Genoa.		
Br. goods, ca.	1	60	Pumps, pkgs.	6	500
Barcelona.			Engines, ca.	1	600
Hdw., ca.	1	35			

Trade Report.

General Hardware.

There has been since our last report no material change in the volume of business. The feeling of uncertainty in regard to labor questions still exerts a depressing effect on trade, but, while it causes a shrinkage in the volume of business, it has also an influence in keeping prices firm, as the tendency of wages is upward, and manufacturers have no assurance that labor and materials will remain as at present. The recent advances are accordingly well maintained, and there is not the usual disposition on the part of sellers to induce the placing of orders by special discounts.

NAILS.

The market has been quieter and steadier, much of the feeling among sellers to retaliate upon one another having disappeared. The meeting of Eastern manufacturers did nothing in regard to prices. The labor question in the Eastern mills is in abeyance, but is not yet definitely settled. We quote \$2.25 to \$2.30 for Iron Nails from store, and \$2.20, nominally, for carload lots on dock. Steel Nails are comparatively scarce. Sellers are making no special effort to place them, and buyers for the time being show no eagerness to obtain them.

BARB WIRE.

The market is quiet, but firmer, less cutting on the part of middlemen being reported. The Eastern manufacturers continue to quote 4 1/4 cents for carload lots, 4 1/2 cents for 3-ton lots, 5 cents for 1-ton lots and 5 1/2 cents for less than 1-ton lots of Four-Point Galvanized Barb Wire.

SAND-PAPER.

A meeting of the Sand-Paper manufacturers was held in this city on the 15th inst., the following houses being represented and uniting in the action taken:

BAEDER, ADAMSON & CO.,
WIGGIN & STEVENS,
HERMAN BEHR & CO.,
H. H. BARTON,
GEORGE UPTON,
I. F. BLOODGOOD CO.

The fact that unsatisfactory prices have for some time prevailed was discussed, and the desirability of making an advance was recognized. While the lists that have previously been in use have for the greater part been substantially identical, the list given below was adopted as the standard to be hereafter adhered to by all the manufacturers. A schedule of quantity discounts was determined upon, which went into effect April 10, according to which, for lots less than 25 reams, the price is made discount 20 per cent. from the following list:

Flint Paper—First Quality.	
Nos. 00, 0, 1/2, 1, 1 1/2.....	Per ream \$4.50
Nos. 2, 3, 4.....	Per ream 5.00
Assorted Nos. in the 1/2 ream (00 to 150).....	Per ream 4.50
Roll Extra Flint Paper.	
Nos. 00, 0, 1/2, 1, 1 1/2.....	Per yard \$0.10
No. 2.....	Per yard .11
No. 3.....	Per yard .12
No. 4.....	Per yard .13
No. 5.....	Per yard .16
Flint Paper—Second Quality.	
All numbers.....	Per ream \$3.75
Emery Paper, in Half Reams.	
Nos. 00, 0, 1/2, 1, 1 1/2.....	Per ream \$6.50
No. 2.....	Per ream 7.50
No. 3.....	Per ream 9.50
No. 4.....	Per ream 11.50
Assorted Nos. in the 1/2 ream (00 to 150).....	Per ream 6.50
Emery Cloth, in Quarter Reams.	
Nos. 00, 0, 1/2, 1, 1 1/2 and 100.....	Per ream \$16.00
No. 2.....	Per ream 20.00
No. 3.....	Per ream 24.00
No. 4.....	Per ream 26.00
Assorted Nos. in the 1/2 ream (00 to 150).....	Per ream 18.00
Crocut Cloth.....	Per ream 18.00

It is also understood that the manufacturers joining in this action are not to make a grade lower than second quality, listed above at \$3.75.

MISCELLANEOUS PRICES.

There are no developments of importance in the Tack market and no indications of the manufacturers uniting on base discounts. The volume of trade is very limited and not sufficient to test the market. There is a good deal of irregularity in the prices quoted by the different companies.

Tinware is irregular and small extras are frequently given. The price is affected by the condition of the market in Tin Plate and Tin.

Clothes Wringers are somewhat stiffer in price than they have been, and there is not the same eager competition in certain lines that has recently demoralized the market. Prices are still, however, quite irregular.

Augers and Bits are being held firmly by the manufacturers, who refuse to go beyond the bottom prices recently adopted.

The following is the price list of Nock's Improved Padlocks, manufactured by Geo. W. Nock, the Penn Lock Works, Philadelphia, for whom W. H. Jacobus & Co. are agents, 90 Chambers street, New York. These goods, as we have already noticed, have recently been added to their line. The discount from the list price is 50 per cent.:

No. 1, Loose Shackel.....	Per doz. \$5.00
No. 100, Secured Shackel.....	5.50
No. 150, Secured Shackel and Chain.....	6.50
No. 2, Loose Shackel.....	5.50
No. 24, Secured Shackel.....	7.00
No. 350, Secured Shackel and Chain.....	6.50
No. 3, Loose Shackel.....	6.50
No. 300, Secured Shackel.....	7.00
No. 350, Secured Shackel and Chain.....	8.00

BLANKS.

Class 1, 2 and 3..... 1.50

The manufacturers of Tackle Blocks were in conference last week, and united upon prices below which they will not sell this line of goods.

ITEMS.

A. F. Pike Mfg. Co., Pike Station, N. H., issue a circular and catalogue of their various kinds of Stone, exhibiting a very complete line. The circular is in English, German and French.

The Maine Mfg. Co., Fairfield, Me., for whom Sise, Gibson & Co. are agents, 100 Chambers street, New York, issue a spring catalogue showing their line of Folding Lapboards, Solid Lapboards, Folding Camp Chairs, Screen Frames, Plant Stands, Children's Sleds, &c. Among the new features their new Folding arrangement for their Folding Tables, for which a patent has been applied for, may be mentioned. Their Folding Table No. 1 1/2 has also been recently added, as has also their No. 45 or Triumph Folding Chair, to the low price of which they call special attention as to its lightness and strength.

The Triumph Wringer Co., Keene, N. H., manufacturers of the Triumph, American, Victor and Leader Clothes Wringers, have appointed C. H. Gurney & Co., of Chicago, their general Western agents for the sale of their goods in the States of Michigan, Indiana, Illinois, Missouri and all the other territory west and north of the same, and refer buyers in that section to them.

The address which was given in our last issue of the Van Wagoner & Williams Co. was inadvertently named as 82 Chambers street, when it should have been, as the trade are doubtless aware, 82 Beekman street, New York.

Harris & Flippen, Greensboro, N. C., issue a catalogue devoted to Guns and other specialties. In their circular to the trade they state that, being manufacturers' agents, they can and will sell at factory prices, and invite the attention of sportsmen to their Gun department, with which they have taken special pains.

The business of the late C. B. Choate, East Saginaw, Mich., who had been long connected with the Hardware trade, is being carried on by his son, Wayne Choate, as administrator, by whom, after the closing of the estate, it may be continued in his own name.

John Wilson, Sheffield, England, issues a circular referring to these as days of extraordinary commercial procedure when England and other countries are being inundated with spurious foreign Cutlery; some bearing pirated marks, and other equally worthless trash not bearing trade marks, of foreign make, is imported and sent out as of English manufacture; and calls attention to the fact that his Butcher and other Knives bear his trade-mark in addition to his name, and alludes to the quality of the material of the blades and the care taken in their manufacture.

The National Cash Register Co., Dayton, Ohio, in sending out circulars relating to their Cash Register, call attention to the fact that no discounts are made from the price list, and that no orders will be received or filled at less than the full list price. From this rule they state that there can be no exceptions, the terms being 90 days, 5 per cent. discount for cash.

S. S. Wilcox & Co., Big Rapids, Mich., have disposed of their agencies and interests in Lime, Cement, Plaster, Coal, Oils, Sewer and Drain Pipe, &c., for the purpose of giving more attention to Hardware, Stoves, Mill Supplies, &c.

Brown & Patterson, Marcy avenue and Hope street, Brooklyn, N. Y., issue a neat catalogue of their Patterson's Patent Portable Forge, an illustration of one style of which is given in their advertisement on page 7.

Pribyl Bros., Chicago, have issued an 80-page catalogue of their goods, appropriately illustrated. They refer to it as partially representing their Fishing Tackle department, consisting of Anglers' Outfits, Camp Furniture, Hammocks, Boats, &c., and call attention to new articles and reductions in price.

Among the Special Notices on page 18 is one in which "Extensive," a Hardware man of experience and wide acquaintance in the West, advertises for a position as traveling salesman. He refers to some leading houses, and desires to represent manufacturers to the jobbing trade.

It will be seen by the Special Notice on page 18 that Selden E. Marvin, receiver, is prepared to negotiate with parties for the sale of the merchandise and good-will of the late partnership of Corning & Co., Albany, N. Y., and the desirability of the opportunity is alluded to.

The HP Nail Co., Cleveland, Ohio, have appointed as their New York agents J. C. McCarty & Co., 97 Chambers street, who are in a position to supply the goods on factory terms.

The Francis T. Witte Hardware Co., 106 Chambers street, New York, issue the ninth edition of their "Red Book." They call this an illustrated Hardware price current, which is printed in plain English—i. e., all quotations being at net rates, they should be easily understood. Dealers who do not care for the arithmetical problems of usual Hardware discount sheets will find that this book is a carefully arranged and really interesting publication. It seems to

be the intention to cover the entire line of general Hardware and kindred goods, and, by careful elimination of detail, furnish a mass of well-digested information in a handy shape, and an inspection of the book will convince the trade that this object is accomplished very satisfactorily.

The National Wire and Iron Co., Detroit, Mich., in order to correct an erroneous impression which they refer to as obtaining in certain quarters, state that the recent strike in their factory was confined strictly to the weaving department, and in no way affected the balance of the works. One-half of their looms, they advise us, are running, and as they have a large stock of Wire Cloth made up, and expect to put in a few power looms, the recent differences arising with the weavers have resulted in but a temporary impediment and will, they say, cause them no embarrassment hereafter.

F. Roloson, Baltimore, Md., issues circulars describing his Improved Dry Air Refrigerators, with full explanation of their special features and illustrations of the different styles.

The American Machine Co., Philadelphia, for whom John H. Graham & Co. are agents, 113 Chambers street, New York, issue an effective pictorial illustration of their Gem Ice Cream Freezer in such a form as to catch and hold the attention, and make an attractive advertisement for the use of their customers.

John F. Carver, Fort Wayne, Ind., advises us that he has purchased the stock of A. D. Brandriff & Co., in that city, whose business has been established some 35 years, and, having added thereto, is prepared to meet the demands of retail and jobbing trade.

F. E. Myers & Bro., Ashland, Ohio, issue a new illustrated and descriptive catalogue and price list of Pumps, Pipe, Hose, Cylinders and fixtures, Hay Carriers, Hay Forks, Pulleys, Grapples, &c. In their introductory address to the trade they allude to the increasing demand for their Pumps and Haying Tools, remarking that their factory has been running throughout the past year on full time with an increased force of men. They direct special attention to the Glass Valve Seat and Expansive Plunger Bucket as having proved a great success. They also invite attention to the modifications and improvements in their goods, which are fully described in the catalogue.

Among new goods to which the attention of the trade is being directed at the present time may be mentioned Moulton's Lemon Drill, manufactured by W. F. Moulton, Burlington, Vt. Its purpose is to extract the juice from lemons, and it is intended to take the place of the conventional squeezers. The method of operation is very simple; the end of the lemon is pared so as to provide an entrance for the drill and to avoid the rind. The drill is then inserted and rotated, resulting in the freeing of the juice and pulp. The article consists of a wooden handle in which four pieces of tin are inserted. It will thus be seen that it is very simple in its parts and inexpensive.

S. A. Haines & Co., 90 Chambers street, New York, have been appointed agents of the Lafayette Wire Works, Lafayette, Ind., for the sale east and south of the Ohio of the Hoosier Calf Weaner and their line of Tinned, Laced and Safety Patent Muzzles.

WHAT THE TRADE SAY.

The following communication from a Pennsylvania Hardwareman relates to a matter in which many Hardware merchants are interested, and concerning which they often feel aggrieved. In the consideration of the subject it must, however, be borne in mind that the seller is always put to more or less expense for cases and cartage. There are many instances in which this expense should be borne by the purchaser of the goods, and others in which the usage of trade leave it to be borne by the merchants or manufacturers supplying the goods. It is often a difficult matter to determine what is proper in a given case, and in order to avoid misunderstanding it is desirable that there should be agreement on this point at the time when the order for the goods is given. The sellers of goods are sometimes disposed to make exorbitant charges for these items, which they place far above cost, and on the other hand buyers not infrequently protest against moderate and reasonable charges. The communication of our correspondent, which we take pleasure in laying before our readers, is as follows:

To the Editor of The Iron Age: Although the subject of which I am about to speak has been written about before, I think Hardware men will agree with me that it will bear repetition, and that is the unjust practice of jobbers in Hardware of charging for cases and cartage. There is not a retailer in the land who does not feel a sense of imposition every time his eye rests on this item on the bottom of his bill. As remarked in a letter by a former correspondent, they could just as consistently add their charges for paper and postage, and to which I would suggest a certain percentage of the drummer's expenses in coming to see you, as to make a charge for shipping their goods. In these days of excessive competition the retailer's profits are not much in excess of those of the jobber in order to keep his home trade from buying from some city supply house; and how often has he been provoked, when taking an order from some customer at competition prices, to find his jobber has almost wiped out his profit in his charges for box and cartage. The jobbers raise the cry in their defense that their boxes cost so much, and their profits are so small, they

cannot deliver free; now if they used new boxes we might make some allowance, but they are very rare; it is generally some old thing punched full of nail holes that has been over the road often enough to have a pass. As to their profits, it is reasonable to suppose they are as good as those of the dealers in House-Furnishing Goods, Tinware, Brushes, Bird Cages, &c., and yet these dealers will deliver f.o.b. without a question, notwithstanding the nature of their goods require large cases at a corresponding increase of expense. I have at present before me three bills just received, all from New York; one is for Bird Cages amounting to \$14, requiring a large case, f.o.b.; the next is for Tinware amounting to \$44, and requiring six good-sized cases, f.o.b., and the last is a bill of Hardware amounting to \$76, requiring but a medium-sized box, with charges added for box and cartage, \$1.20. Now here we have the inconsistency of the charge; we will allow them the same percentage of profit, and we have the party at the least expense and selling the largest bill and making the most money as the one who wants you to pay his expense. There are some houses who have abandoned these charges and sell just as close, and they should be encouraged by increased patronage as fast as they make themselves known. There is no reason or justice in any claim of the jobbers that the expense of delivering their goods to the depot should come out of the profits of the buyer instead of their own. The buyer has his freight to pay and there it should end, and all it seems to the writer it requires is a united and vigorous "kick" against these charges by the retailers to have them abolished forever.

PENNSYLVANIA.

Concerning this matter of charges for case and cartage, which was alluded to by another correspondent, a New England house some time ago wrote as follows:

We would say to your correspondent who complains of the jobbers' charges for case and cartage that he order all goods f.o.b. cars, and he will get them free from these charges. We adopted that rule some three or four years ago, and only two or three jobbers in Boston, New York, Albany, Troy, Utica, Detroit, St. Louis or Pittsburgh, where we buy goods, declined to come to our terms. Some of them refused to do so for a few months, but soon came to it, as they found we meant what we said, as we pay cash on receipt of goods here, getting a fair discount for spot cash.

An Illinois Hardwareman, alluding to the usefulness of the discussion in regard to the arrangement of Hardware stores, would like suggestions from the trade as to the best way to take care of or file letters, circulars, small catalogues, &c., so that when a description or a quotation is desired it can be found, as our correspondent expresses it, without hunting over from 1000 to 3000 different papers. This is a matter of general interest and of much importance, and we shall be glad to have from Hardwaremen a statement of how they do it.

Referring to the matter of the putting up of goods, and especially their labeling, a correspondent intimates that the manufacturers who put up their goods in the best shape will be given the preference, quality being equal, and adds that while much improvement has been made in this direction there is still room for more.

Perhaps some Hardwaremen can sympathize with a correspondent who writes to us in regard to a prevailing custom which he refers to as annoying and injurious to his business. In his town he complains that some of the merchants who are not Hardwaremen can buy Hardware of wholesale houses as cheap as he can, while some drummers even sell to blacksmiths, thus cutting off legitimate Hardware trade. The reason for this he explains to be that he does not buy from every traveler that calls on him, and therefore, to make him suffer for not giving an order, they go to his customers.

A Hardware house in the West writes as follows in regard to the condition of trade:

We cannot report any great increase in the volume of business within the last week or two, though some little improvement is noticed, due more especially to the pleasant weather, so favorable to building operations. The talk of building is much less than two months ago, and though not desiring a place in the grumblers' gallery, we can see no very flattering outlook for the spring and summer business. Prices remain the same. The average drummer of specialties "can make prices an inducement," which fails to catch in quiet times. So the world wags on, and it will soon be time to buy Heating Stoves!

From Dudley Bros. & Lipscomb, Nashville, Tenn., we have, under date of April 17, the following review of the market:

Business has been somewhat better since the waters receded, although we do not expect a large trade at this season. We have had a good number of country merchants in the market the past week, but owing to a pernicious system of street and hotel drumming, which seems to be carried to a greater excess in Nashville than in any other city, business is rendered unsatisfactory to both buyer and seller. The buyer desires to trade with his favorite house, but he is met at every street crossing by an avalanche of drummers. One makes a cut at one thing, another whacks away at something else, and thus it goes until he finally runs the blockade, and reaches the place where he intends to buy, thoroughly disgusted and demoralized. The seller finds him harassed and his mind confused with prices from unreliable sources, and frequently has to make otherwise uncalled-for concessions in order to get the order. There is a weaker feeling in Nails. The spring trade does not seem to be as heavy as anticipated, and the mills are anxious for orders. The demand for Wire, both Plain and Barbed, seems to continue later than usual for our market. The trade in Cartridges, &c., which has been quiet since January, is beginning to improve.

Builders' Goods and Shelf Hardware of all kinds are moving very slowly.

One of our correspondents, referring especially to Agricultural Implements, alludes to the fact that different localities require different kinds of tools as one that is not susceptible of an obvious explanation, and then he goes on in a pleasant way to refer to some of his early experiences, and to certain false impressions that still prevail:

I am unable to tell why one portion of a single country should use so very different kinds and makes of tools, unless it be on account of the difference in the soil, and perhaps also to the training of the young who turn their attention to farming. My experience may be like some others, and may explain it in a measure. When I first opened my eyes on the wonders of this mundane sphere, which was 56 years ago, I am told I found myself in an old frame house on a farm, situated 25 miles from any city, and some 3 miles from a small village, and there I grew and developed into something like a man until I was 22 years of age. As soon as I was able, I was put to work with tools that some farm laborer had discarded, and after they were tinkered up I was told they were good enough for a boy. Shades of all the good saints deliver me from ever being a boy again! I was told to go the field, and there expected to do my share of the work, the same as if I had as good tools as my fellow-workmen. The tools were all crude, and if one of the boys dared to suggest an improved tool he was told that the tools we then had were "better than those I had when a boy," and so I grew up with the idea that anything was good enough for a boy to work on a farm, and the old idea may predominate in some sections still, as I think it does. Even in this day and generation, I have men come into my place and condemn tools of which they know little or nothing, because, forsooth, they are different from what they used when boys.

THE NATIONAL MFG. CO.

A number of St. Louis gentlemen, prominent financially and as manufacturers, have taken steps for the organization of a company for the manufacture in that city of Hardware on a large scale, with the object of giving St. Louis a position in the manufacture of Hardware corresponding to its importance as a Hardware distributing center. Among the names of the parties who are actively identified with the movement are the following:

Oliver B. Filley, president of the Missouri Furnace Co.; George W. Parker, president of the Parker-Russell Mining and Mfg. Co.; H. C. Duggan, president of the Duggan-Parker Hardware Mfg. Co.; H. M. Filley, president of the St. Louis Malleable Iron Co.; Thomas E. Tutt, president of the Third National Bank; T. G. Russell, treasurer of the Parker-Russell Mining and Mfg. Co., and others. It is stated that three-fifths of the capital has already been subscribed, which will be not less than \$250,000. The prominent goods to be manufactured will be Carriage and Wagon Malleables, Plow Clevises, Shelf and Heavy Hardware, Builders' Hardware, &c., with other lines. For the purposes of immediate manufacture the Duggan Parker Hardware Mfg. Co.'s large works will be operated, and also the works of the St. Louis Malleable Iron Co., these two establishments occupying, it is said, nearly 3 acres of ground. When the capital is fully subscribed the National Mfg. Co. will purchase both plants, and, with the additions that are contemplated, the capacity of the Duggan-Parker Works will be increased 75 per cent. and the capacity of the St. Louis Malleable Iron Works will be doubled. This is not to be regarded as a consolidation of these companies, each of which will wind up its own business, and the new company purchase the plants and make additions as intimated above. The interest and importance of this announcement not only to St. Louis, but to the trade at large, will be recognized by our readers.

ARRANGEMENT OF HARDWARE STORES.

In the accompanying diagram we take pleasure in indicating the arrangement of the store and Iron house of H. A. Winship, Bradford, Vt., which will, we doubt not, be suggestive and serviceable to some of our readers. In connection with this plan we have detailed drawings of the Iron house illustrating the construction and arrangement of racks, which we regret that on account of the space they would require we are unable to lay before our readers. W. the diagram Fig. 70 and the following description our readers will be able to form, we trust, a satisfactory idea of the arrangement:

The main building is of brick, two stories, with brick partition walls 1 foot thick, 60 feet front, south end or left 60 feet, north end 42 feet. No. 1 warehouse not being of sufficient size for convenient handling of Bar Iron, something had to be devised to meet the want, and the outcome of it is an Iron house placed 10 feet in the rear of the main building, it being necessary to preserve a driveway all around the main building. The Iron house is irregular in shape, as will be seen by reference to the plan, being 27 feet on the north, 31 feet on the east or front, 38 feet on the south, and 31 feet on the west side or back, which is built against a bank wall which runs diagonally with the front line of the building. This irregular shaped piece was all the land available. Hence the irregular shape of the building. Inside the Iron house there is on the south side an upright Iron rack with 36 compartments about 6 inches wide (according to the size of Iron contained), with the size of the contents over each compartment; also at the west end of this rack another with four compartments 1 foot wide. These are used for Band Iron. The Iron in these compartments is not arranged in regular order,

but with a view of having the sizes most used the most convenient to handle. On the north side of the house there is an upright rack with 17 compartments of various widths, with size of contents over each compartment. This is used for small Round Iron, of which two grades are carried in stock. On the west side of the house, at the end of the last named rack, is another of nine compartments, 6 inches wide, with size of contents over each compartment. This is used for Tire Steel.

In the center of the Iron house is a low-grade Steel and Iron rack. This is 9 feet high, 13½ feet wide, 19 feet on south and 14 feet on north side, and has 204 compartments, a part of which are 8 x 6 inches and a part 6 x 6 inches, divided by 2 x 4 inches upright plank with ¾ inch Iron Rods, for the various sizes to rest upon, with the size of each compartment on the upright. Here again in this large rack the same idea is carried out as with the Band Iron. The heaviest and sizes most used are placed in the easiest and most convenient localities, without regard for system. This is found to work very satisfactorily, as in the short time the rack has been in use, about six months, sizes

Glass, Mixed and Dry Paints, and Carriage and Wagon Wood Work. We know of no better way to keep Iron than to set on end against the side walls of Iron room, sizes separated by wood pins large enough to mark size and kind on the end of pins. Paint the ends white and mark with black paint. A rack will do for Hoop and Light Band Iron, but is not large enough for Bar Iron, unless for small retail trade, where they only buy a bundle of a kind at once. By setting on the end you occupy only a small space on either side of your Iron room, and have the center of room for your Iron cutter, Hoop Iron rack, and such



Fig. 70.—H. A. Winship's Store and Iron House.

can be found as readily as though they were in regular order. This method of racking also decreases the chances of error. On the top of this large rack are two others. That at the left or south side is used for Cast Steel, with sizes on the upright division board. This rack is 2½ feet wide, 10 feet long and 5 feet high. That at the right or near the center of the large rack (on top) is used for Fancy Iron, and is 2 feet wide at bottom, tapering to 1 foot at top, and is 4½ feet high and 13 feet long. There is a stairway on the north side leading to these two last-described racks. On the south side of the low-grade Steel and Iron rack is a rack with 31 compartments, each 6 inches wide, with size of contents over each compartment. This rack is used for Norway Shapes. The front of the Iron house is opened with a portcullis gate, which slides up and down, and, being suspended by weight, runs very easily. There is also a hinged bridge 4 feet wide across the driveway, connecting the covered platform with the Iron house. This bridge is also raised and lowered by weights, and by using the bridge across the driveway the floors of the main building and the Iron house are all on a level, thus making easy transportation for heavy weights. The roof of the Iron house is supported by three pairs of heavy cross-beams with numerous braces, and is lighted from the roof by two pairs of windows reaching from eaves to ridge pole. A Cleveland Cutter is set in a convenient place for use. Also a Howe Rolling Mill Scale, with sliding poise weighing up to 1500 pounds.

Our correspondents in the extracts given below make suggestions with reference to the general arrangement of the store, and express their views on the best methods of managing certain lines of goods. They also allude to a Screw Case, to which we shall refer in another issue:

We have read with much interest, amusement and profit the different articles in your valuable paper. There seems to be a great difference of opinion as to the arrangement of stores, some favoring boxes, some lids and others the original packages. We think that by combining the three a store can be made to look well and at the same time convenient. Boxes for some goods are really a necessity. We need to mention only one article to suggest the class of goods to keep in boxes—small Tacks. You may cord up a dozen or more of 1 or 2 ounce Tacks, and if you are not careful they will tumble down before you are through putting them up. Lids are nice to close up the bins where Strap and T Hinges are kept, as the dust can be kept out, but for general stock we think nothing looks so well as the original packages. Some manufacturers use too light material in their boxes. We have not a model store, as we are unfortunate enough not to own the room occupied, but, were we to build one after our own ideas, it would not be less than 30 x 100 for the main room, with Iron room in the rear, divided from the main room by an arched partition. We built a room in rear of the building we occupy, at our own expense, and use for Iron,

bulky goods as you do not want to keep in the main room. For the main room we think shelving should extend two-thirds of the length of the room on both sides, and two-thirds the height is not a bad rule to go by, with a wide top shelf for bulky light goods, such as surplus stock of Carpenters' Chalk, Horse Brushes, Whitewash Brushes, Gun Wads, &c. We prefer counter on one side, same distance as shelving, with Nail bins underneath, and on the other side about one-third the length of shelving, the remaining distance with wide ledge, leaving deep shelves underneath (here is the place for your lids). We have row of drawers full length of shelving, and would have them near middle of Hardware store. They are very convenient for keeping Wood Faucets, Currycombs, Glue, &c. Underneath these drawers is a good place to keep Strap and T Hinges in bins. We have a case of drawers for Bolts up to 4 x 5-16 inch. For larger sizes we have pigeon holes in shelving spaced according to size of Bolts for retail. We bought three discarded spool cases from a dry goods man at a small expense, and find them very convenient to keep small articles in, such as Awls, Harness and Packing Needles, and many similar articles that are hard to keep in good shape on shelves. We keep no Stoves, Tinware or Farm Machinery, and think when a town is large enough to support the different branches that they should not be mixed.

Most of our correspondents have expressed the opinion that it is desirable to sample goods so that they may be in sight of customers, and many of them have spoken favorably of wooden boxes for containing the goods, on the outside of which samples can be placed. A Hardwareman in Ohio, however, takes a different view, referring to what we take the following extract from a recent letter, in which, it will be observed, he also touches upon other points:

We do not believe in boxing and sampling goods. It bothers a buyer, and our own experience is that we can sell a man nine times out of the ten from the original packages. We use a small room, and could not get our goods into boxes and sampled, and, having again used the sampling business at one time, we have learned that goods are spoiled in this way, becoming eye-sores, and mostly a loss. Showcases pay better. We believe in condensing everything, especially if there is necessity for it. In our own room we have a Showcase, wall Cutlery Case, wall Tool Case with glass doors, Dayton Revolving Screw Case and Twist Drill Case, with Pocket Knives and Scissors, with Plated Ware, in a flat Showcase (two Pocket Knives on a box).

A merchant at Cortland, N. Y., who was burned out in the latter part of February, 1884, losing his entire stock and fixtures, has prepared a plan, Fig. 71, of his store as it was reconstructed, with a very interesting description of its features. The stock of goods carried includes both stoves

and hardware. After mentioning that it was necessary for him to begin from the foundation and have everything new, he says:

My store is on the east side of Main street, facing west. There are plate-glass windows in the front, with transom and double plate-glass doors in the center of the front. The doors are set back and the show windows are on a level. On the left as you enter the store there are large showcases set against the wall in place of shelving. These are lined with red Canton flannel and are used for the display of polished steel tools. Down the center on the left-hand side is adjustable shelving, extending upward as high as can be reached conveniently. The space on the top of this shelving is utilized for storing surplus stock, such as jappanned ware, ornamental chamber sets, wringers, pumps, &c. Four tiers of drawers with labeled pulls, the labels being covered with glass, extend part of the way down the length of the room. The drawers are of assorted sizes from 36 inches inside measurement down to smaller dimensions. Under the shelving on the back half of the left-hand side where the drawers and the nail bins commence. Each bin is made large enough to easily hold 200 pounds of nails. The bottoms are made V-shaped, the angle being obtuse rather than acute. The bins are built of hardwood, and are so arranged that nails are raked lengthwise instead of crosswise of the grain of the wood. This arrangement enables me to get rid of the dirt in the bin very easily, and avoids having nails scattered all over the floor. A separate bin is provided for every size of nail handled from 2d. to 6d. Under the large counter are also similar bins arranged for finishing nails, casing, box, cliach, steel and other odd varieties. Bins are also provided for fence staples, pump chain and the like.

Three nickel-plated showcases are located on the counter. The first one of these contains fine pocket cutlery and razors. The second one holds fine polished steel tools, door pulls and bells and miscellaneous novelties. The third one contains table cutlery, silver-plated flatware, scissors and shears. There is a desk located halfway down the store, with an alarm cash drawer underneath it. This desk contains salesbook, daybook and petty ledger. The desk is surrounded at the top of the front and ends with a handsome iron railing about 2 feet high, with opening in front through which to make change.

For bolts I have wooden boxes for assorted sizes, made with dovetailed corners, with the fronts shelled and varnished. These are marked with black letters and figures giving sizes of bolts. They occupy a whole section next the office. The office is provided with a long standing desk on the north side, and beneath it is a cupboard provided with doors. The cupboard is fitted up with some 25 or 30 large pigeon-holes for catalogues. These are lettered alphabetically, and the catalogues filed accordingly. My safe, location of which will be understood by reference to the plan, is a large one. Next to it in the office stands a nice rolling-top Derby desk, with revolving chair. While seated at my desk I can turn so as to reach most of the catalogues needed for reference. The railing about the office is 6 feet high, and is provided with a door having a double spring hinge. A cashier's window is provided in the side, with a plate-glass shelf under it. The entire back end of the office is of glass. The windows and sash doors are double-glazed. Large transoms are provided. The transoms, both front and rear, are provided with fixtures by which they can be fastened at any point for ventilation.

The south side of the store has near the front two cases against the wall, with sliding glass doors and drawers underneath them. In these cases are kept Britannia ware, nickel-plated ware, polished brass goods and the best grade of agate tea and coffee pots. All down the south side the shelving is made adjustable, with wide counter shelf to display tin and agate ware, pressed-ware, &c. On the top of this shelving is kept my stock of boilers, sprinklers, cream pails, &c. Under the broad shelves I have double cupboards all through. One door slams shut and catches with an elbow catch that is fastened to the shelf. The second door fastens to the first. The doors are easily and quickly

pigeon-holes for axe, pick, sledge and adze handles. In this location they are away from the furnace heat.

My elevator runs from the cellar to the fourth story. A platform is provided outside opposite the elevator, from which to load and unload stoves. I do not allow any goods to be hung from the ceiling. My store is 20 feet deep, 25 feet wide and 13 feet high. The cellar is of the same dimensions, is very dry and is provided with a plank floor. The back end is partitioned off, with sash in the partition. The room which is thus secured, being about 25 feet square, is used for blacking stoves and other dirty work. This leaves the front part of the cellar clean and neat. Bins or pigeon-holes are arranged on the south wall for holding castings, and for convenience are lettered from A to Z. Others are used for holding brick, and are likewise lettered for convenience in finding desired articles. My stock of iron is kept in the same way on racks composed of heavy posts and pins made of three-quarter round iron pipes put in on a slant. Gas-pipe is similarly stored. My stock of lead pipe is contained in reels located in the front of the cellar. The construction of the reels will be understood from the sketch, Fig. 72. This plan of storing lead pipe (which ordinarily is a nuisance to retail) makes everything very convenient. The reels are located so that pipe can be run off the whole length of the cellar without the necessity of any heavy lifting or any danger of jamming the pipe. The windows in the front of the cellar are on hinges, and can be hooked up so as to run out iron or gas pipe. The space under the pavement is excavated for a coal bin. This is of sufficient capacity to hold 20 tons. The coal bin is lighted by illuminated covers to the coal hole. The bin is shut off from the cellar by a tight door which keeps

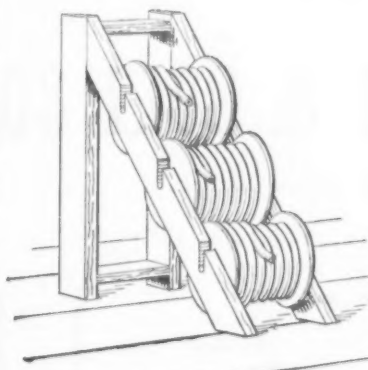


Fig. 72.—Reels for Lead Pipe.

out all dust. Glass cases arranged to hold too sizes of glass are provided in the cellar way, front. The tinshop is located in the second story, over the back end of the store, thus giving it access to the elevator. A speaking-tube extends from the tinshop to the office. My stock of charcoal is stored in a nice tight building by itself in the rear of the store. The charcoal is kept in 3 bushel bags, so that when a sack is emptied it will be all used. This prevents a portion being left in the bin, and in time accumulating and making a fine dust. A bin also located in the rear and kept under lock and key is for storing old iron. It is situated near the elevator entrance. The room in the fourth story of the building is used for storing surplus stock and unseasonable goods. For screws at retail I have a set of metal drawers set into the shelving. Each drawer holds at least 1 gross of screws, and enough of all sizes from ¼-inch No. 0 to 3-inch No. 20. The arrangement of my stoves will be gained by inspection of the plan submitted herewith. By having stoves and ranges mounted on easy-running casters one man can handle a 600-pound range very easily. It is not difficult for him to take it from the front of the store to the elevator platform.

If I have any hobby it is to possess a clean, tidy and attractive store. I like to have everything in its place. When the stove and range trucks are not on a line we give the order, "right dress," and into line they are immediately brought, the same as soldiers on dress parade. After all it is just as easy to have a nice, tidy store, and keep it so, as to have everything under foot. My sys-

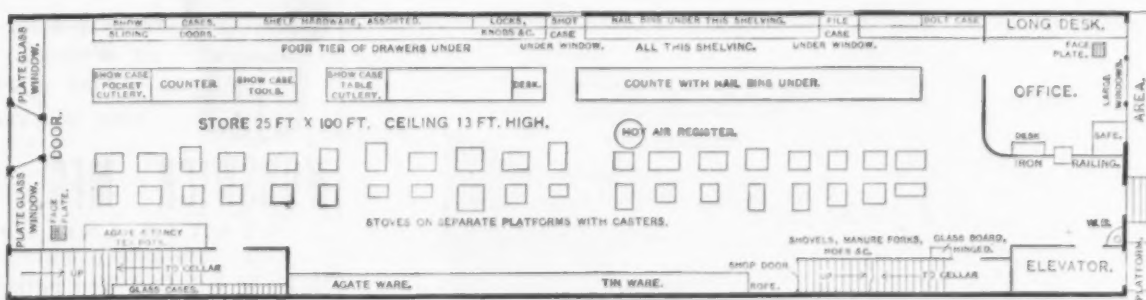


Fig. 71.—Arrangement of Hardware and Stove Store at Cortland, N. Y.

tem of heating may be of interest. A hot-air furnace is placed near the center of the cellar, and from it one large pipe leads to a register directly over the furnace. Other pipes lead to the ends of the store. Open-face plates are provided through the floor to draw off the cold air from the floor. As the one in the rear would open directly into the blacking-room, I have connected it with the front or clean cellar by a tin pipe through the partition in the cellar. I keep my front cellar clean and take my cold air from it.

AN ENGLISH VIEW OF CATALOGUES. A recent issue of the London Ironmonger calls attention to the utility of catalogues and makes some points in regard to them. It refers, as will be seen, to the inconvenience that is suffered on account of the diversity in their form and size, a matter with which American Hardwaremen can sympathize with those on the other side. It is, however, very questionable whether the convenience of the trade will be permitted

to govern this matter. The enterprise of American manufacturers in representing their goods is acknowledged, as well as the skill with which their catalogues are gotten up. The article which we print below refers to these and other points, some of which will be found suggestive to our readers:

Of the utility of catalogues there is no question whatever; indeed, they may be regarded as being necessary adjuncts to every business of any size. Whether catalogues as now generally prepared and issued are in all respects what they ought to be is an entirely different question, and one which we think may be briefly referred to on this occasion. In the first place comes the somewhat awkward problem of size and dimensions. Recipients of catalogues are constantly complaining of the great irregularities in this respect, which irregularities render the sorting and classification of catalogues a very difficult task. There is no uniformity in the sizes, so that the merchant or ironmonger who desires to keep the books relating to one class of goods together finds that he has them of all sizes—from 2 to 3 inches square up to volumes 20 or 22 inches by 9 or 10 inches. The result is a higgledy-piggledy mixture of sizes which is not only unsightly, but also opposed to all ideas of order and convenience. We ourselves have frequently advocated the adoption of something like a uniform size, say, of 9 inches by 6 inches, for all catalogues and price lists, and we hope to witness the adoption of that rule in all cases. There may be a few instances in which the printers may find it difficult to get in large blocks in pages of that size, but such instances would be rare, and it would be better to have new and smaller blocks cut rather than spoil the book for that reason.

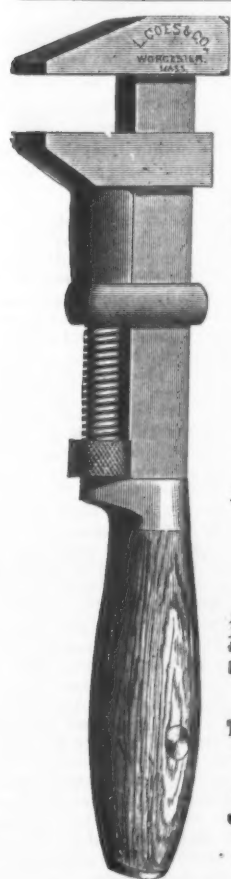
Having thus referred to size and dimensions, we may pass on to the subject of illustrations, without which no catalogue can be considered complete. These should be done in the best available manner. A good picture often sells the article it depicts, and will, at all events, always impress the reader more than a poor and scratchy engraving. In this particular the Americans, and in many cases the Germans, are producing some excellent work. We have inspected catalogues of American firms which are veritable fine-art productions, one in particular, referring to silver goods, having round goods shown up by embossing from dies at the back, thus presenting a most striking representation of the articles illustrated. This is perhaps carrying the thing to extremes, yet it is very important that all illustrations should be done in the most artistic and striking manner. The letter-press, borders and covers all require care, and should be at once tasteful and business-like. Too much letter-press is a mistake, especially in the very small type often used. Let your typography be bold and well displayed, while being also plain in its terms, and so clear in respect of conditions, discounts, &c., as to appeal to the meanest understanding.

Catalogues cannot be too clear, for business men cannot afford to waste time in solving problems, and buyers will not trouble themselves to work out figures which they know should have been set out for them. Where freights and duties come into question these should not be shirked, but a medium rate of freight taken and quotations given, both f.o.b. at suitable British ports and c.i.f. at leading ports, in the markets for which the goods are intended. The adoption of that course would save foreign buyers from details at which most of them are anything but adept, and would also facilitate the preliminaries of transactions likely to lead to actual business. Then, again, catalogues should always be sent out post free and without charge, unless a deposit is required for very special reasons. A catalogue is merely an extended advertisement, and should be sent post free in all possible cases. Finally, attention ought to be paid to foreign requirements in the shape of languages suited to different markets. Most of our leading manufacturers recognize this, and have editions in the principal commercial languages, but thousands of manufacturers only prepare catalogues in English, and so lose business which might accrue were they to approach probable buyers in the languages and with the prices, dimensions, weights,

&c., which they properly understand. All these may seem to some to be "minor matters," but in reality they are not so, and must be attended to assiduously if we of this country are to maintain and increase our export trade.

The German Bureau of Statistics has published the provisory results of the production of the German mines and works in 1885. The chief figures are:

Articles.	Quantities.		Values.	
	1885.	1884.	1885.	1884.
Coal.....	58,398,878	57,253,875	302,825	298,740
Brown coal.....	15,367,477	14,857,879	40,212	39,512
Mineral salts.....	1,390,156	1,313,593	13,095	12,395
Iron ore.....	9,961,986	8,225,454	83,580	67,275
Zinc ore.....	690,622	652,040	7,548	7,819
Lead ore.....	128,069	160,841	15,108	15,593
Copper ore.....	671,080	559,351	19,222	18,147
Silver and gold ore.....	28,408	25,103	4,179	4,812
Pig iron.....	8,562,634	8,562,136	158,746	157,363
Zinc.....	113,356	106,614	29,574	29,669
Copper.....	10,112	18,750	19,568	22,633



L. COES'
GENUINE IMPROVED
Knife Handle
PATENT
Screw Wrenches

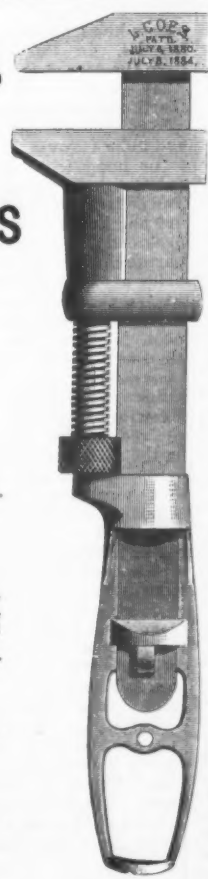
MANUFACTURED BY
L. COES & CO.,
Worcester, Mass.
ESTABLISHED IN 1839.



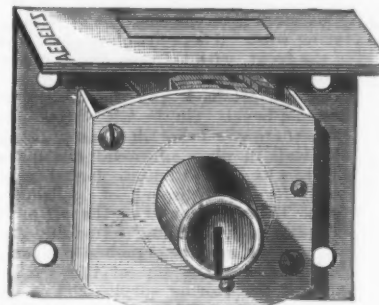
Sectional view illustrates our NEW
KNIFE HANDLE, showing Malleable
Iron Frame and Shank of Bar keyed
into position.
3/8" Straight Bar, Extra LONG NUT
FOR SCREW IN JAW.

The Best Made and Strongest Wrench in the Market.
Send for Illustrated Price List and Circular.

J. C. McCARTY & CO.,
NEW YORK,
Sole Agents.



A. E. DEITZ.

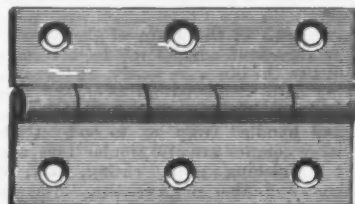


No. 51 Lock.

J. C. McCARTY & CO., Agents,

97 Chambers and 81 Reade Sts.,

NEW YORK.

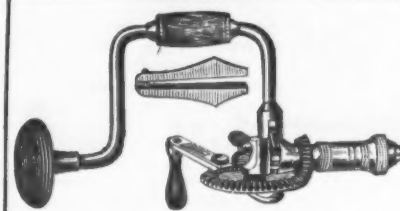


W. & J. TIEBOUT,

MANUFACTURERS OF

BRASS, GALVANIZED & SHIP CHANDLERY
HARDWARE.

Nos. 16 & 18 Chambers Street,
NEW YORK.



DRILL BRACE.



RATCHET BRACE.

During the year 1885 many new styles of Bit Braces were put on the market, and many old styles were much reduced in quality and price. In face of it all we made our Braces a little better than ever before, and kept our prices steady.

We felt certain that good workmen would buy good tools, and that they would find them in some place. The result bore out our anticipations. Though business generally was not remarkably good, we found at the end of the year that our Brace sales had been larger than ever before.

For the year to come we will make still better goods, sell them at a reasonable price, and trust that our friends, the Dealers, will put them within the reach of all who want them at such prices.

MILLERS FALLS CO.

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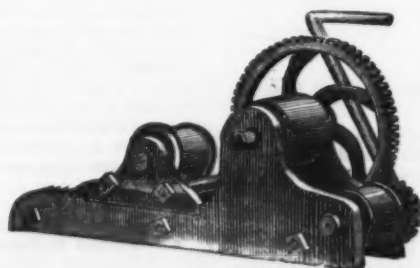
ILLINOIS IRON & BOLT CO.,

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CARPENTERSVILLE, KANE CO., ILL.

Blacksmiths' Tools,

MANUFACTURERS OF



Thimble Skeins,

Tire Bender No. 2,
JACK SCREWS,

Track Jacks, Carriage Makers' Vises,

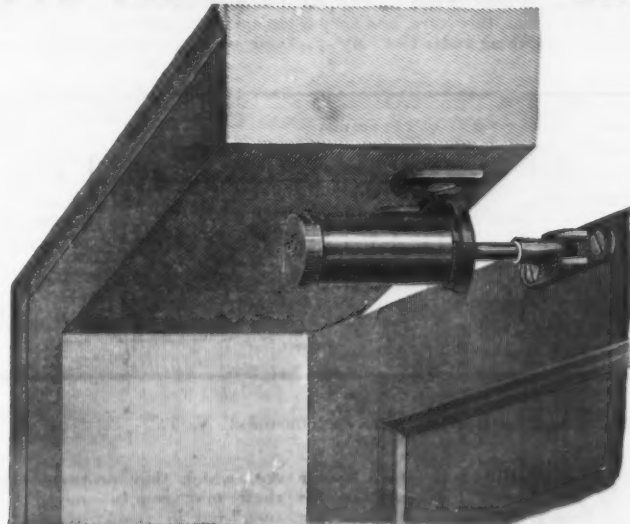
SAD IRONS, COPYING PRESSES AND STANDS, &c.

WATTS & MANUFACTURING & CO.,

480 PEARL STREET, NEW YORK

SOLE MANUFACTURERS OF THE

WATTS PNEUMATIC DOOR CHECK.



The Latest Improved, Most Simple and Only Reliable Door Check
Now on the Market.

It can be applied to either side of the Door or on the casing overhead. In fact, the only universal Air Door Check made that can be sold over the counter, not requiring an expert to put it on. Can be applied by anybody, and are sold at a less price than other Checks. Catalogues and Price Lists furnished on application.

E. MERRITT & CO.
ESTABLISHED 1859 — BROCKTON, MASS.
The Only Manufacturers of a Complete Line of
TACK AND NAIL MACHINERY.
SEND FOR CIRCULAR — UPRIGHT DRILLS.



ALWAYS GIVES THE
UTMOST SATISFACTION.

Main Belting Co.,

Manufacturers of
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Unsurpassed for
Strength, Durability and
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Made to any Length,
Width and Strength.

Main Driving Belts.

Guaranteed to Run
Straight, Even Through-
out.

No Cross Joints, Un-
affected by Damp-
Clings well to the Pulley.
Has no equal. In fact,
is THE BELT.

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S. W. cor. Ninth and Reed
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Also
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**EXPANDING
TAPS**

From 3-4 in. to 10
in. Wrought-Iron
Pipe Size.

SEND FOR PRICES.

WORSWICK MFG. CO.,
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Manufacturers of

Malleable and Cast Iron Fittings and
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IRON PIPE AND BOILER TUBES.

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USE THE **Mason**
Pressure Regulator
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USE THE **Mason**
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THE MASON REGULATOR CO.,
Manufacturers of Steam Traps, Pressure Regulators
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22 Central St., Boston, 115 Liberty St., New York

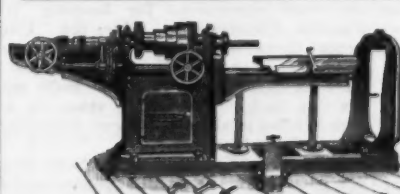
THE SEIDEL & HASTINGS CO.
WILMINGTON, DELAWARE,

New York Office, No. 221 Pearl, Corner Platt Street,
MANUFACTURERS OF

**BEST CHARCOAL
BOILER PLATES,**
AND PLATE IRON GENERALLY.

ALSO BEST QUALITY HOMOGENEOUS STEEL PLATES.

We ask the special attention of the trade to our C. H. No. 1 Boiler Plates, which we manufacture expressly for the Shells of Steam Boilers and stamp 50,000 pounds T. S. when desired. One hundred and sixteen tests of this iron, made during the last three years by the U. S. Inspectors of Steam Vessels, show an average tensile strength of 59,808 pounds to the sectional square inch, and an average reduction of area of the fractured section of 30% per centum. Our prices are as low as the production of a good article will admit of.



BETTS MACHINE CO.,

Wilmington, Del.,

MAKERS OF

IMPROVED

MACHINE TOOLS.

Double
Acting
Spring

BUTTS

SABIN'S LEVER DOOR SPRINGS,
Coil, and Sabin's Volute Springs
For various purposes made to order.

SABIN MACHINE CO., Montpelier, Vt.

STRONGEST ACME WRENCH AND BEST



ALL STEEL CASE-HARDENED JAWS, WARRANTED, MANUFACTURED BY
OWSLEY BROS. & MARBLE, 784 to 794 Madison St., CHICAGO, U. S. A.
Description and Price List Furnished upon Application.

PURE TURKISH EMERY.

WALPOLE EMERY MILLS,

South Walpole, Mass.

MECHANICAL.

New Planer and Matcher.

The Egan Co., of Cincinnati, Ohio, are now putting on the market their new No. 2½ planer and matcher, and claim for it special advantages as a good, reliable machine for general use. It is a machine of very large range (planing 26 inches wide and 6 inches thick, and matching 14 inches

of simple construction, well cleared at the sides to prevent gripping, and of as ample surface as the space at the disposal of the designer will allow.

The Globe Die Stock.

The accompanying engraving represents a novel form of tool manufactured by the Globe Tool Co., of Indianapolis Ind., for whom the W. B. Barry Saw and Supply Co., of that city, are general agents. This tool is designed especially for the use of gas and

to set to zero, the spindle is pulled out till the worm touches the spring, and with the thumb and finger one dial is slipped over the other until the notch on top dial is over zero on the under dial. The spindle is then pushed back into position and the index pointer is slipped to the notch on top dial. In using the counter hold watch in one hand, and with the other lightly touch the center of the end of shaft to be counted with the three-cornered point. When the watch indicates the proper time to begin to count,

of the largest loads. One other and very important advantage of having a hydraulic system as part of the equipment of an engineering establishment is in the means which it affords of employing hydraulic pressure in the execution of smithwork and riveting.

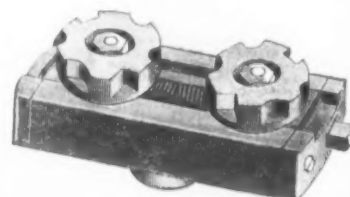
The Wilkins Locomotive Coupler.

The Wilkins Locomotive Coupler, shown in the annexed cut, is designed to be placed on the rear end of tenders used in passenger

New Haven and Hartford, and the New York, Providence and Boston, and other railroads. It is made by the Eames Vacuum Brake Co., of Boston, Mass. Mr. R. K. Runyon, 5 and 7 Dey street, New York, is the agent.

The Acme Chuck.

P. G. March & Co., of Cincinnati, Ohio, are the makers of what is known as the Acme Chuck, of which we annex a cut. The device is particularly valuable to brass-workers or others having duplicate work to do in quantity. The jaws revolve upon the stud, and can be spaced and formed to suit any special work; each jaw will take the place of six or eight ordinary slip jaws. The "forms" made in the jaws may be half circles, squares or of irregular forms to hold any special work. The jaws can be fitted to hold eight sizes of valve-stems, for instance, and can then be marked, thus avoiding the trouble of misplacing and mis-

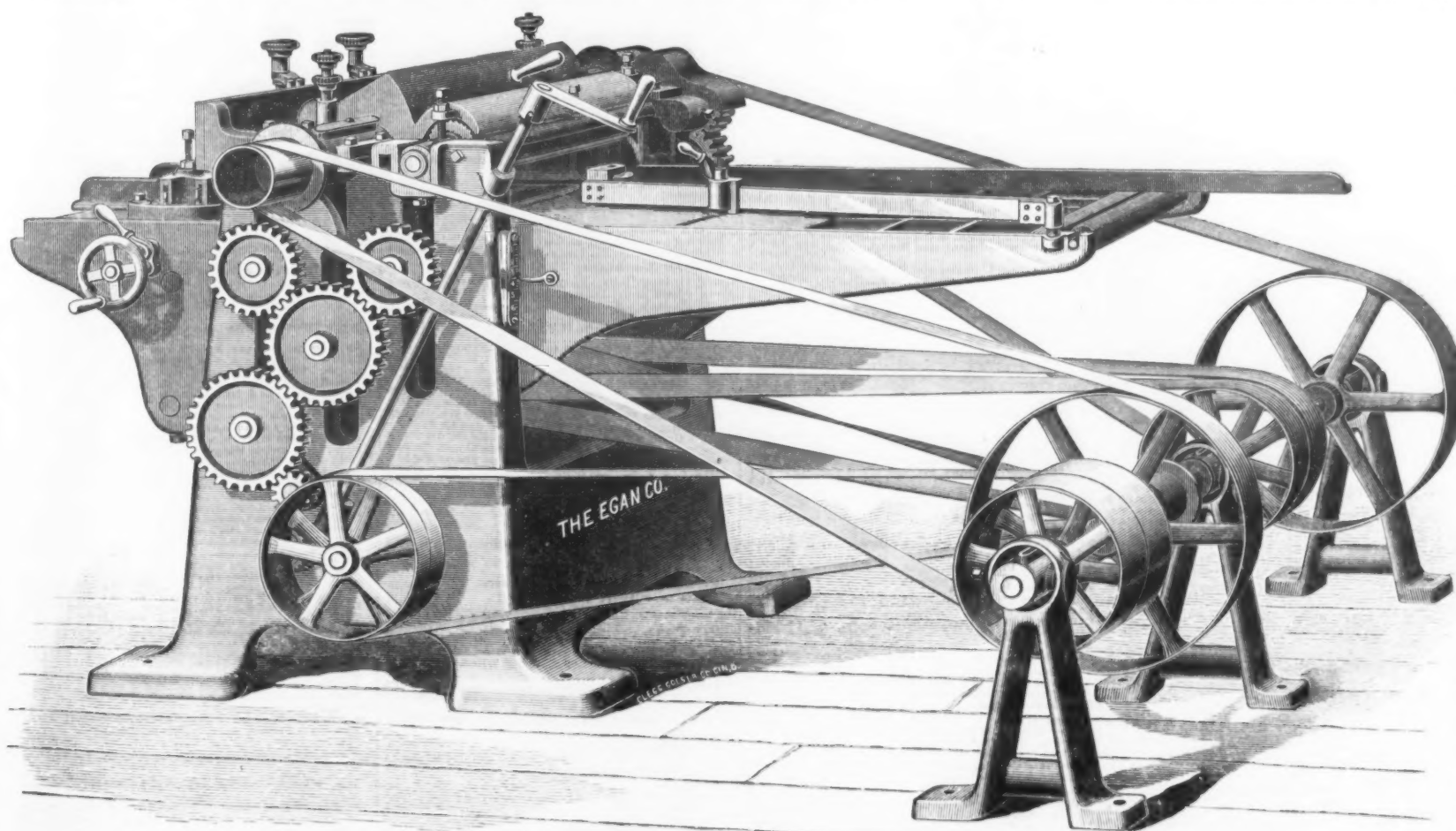


The Acme Chuck, Made by P. G. March & Co., Cincinnati, Ohio.

mating of 16 slip-jaws. The turret-jaw revolves on the stud, which is part of the slide-nut, and is held in exact position by a dowel located underneath the jaw. The jaws are furnished blank, to permit the user to "form" them as desired, and then they can be hardened.

Red Sea Petroleum Beds.

The petroleum beds discovered in the peninsula of Jemeh, on the west coast of the Red Sea, about 170 miles south of Suez, at the foot of the mountain known as Djebel Zeit, or Oil Mountain, appear to be a reality. It has long been known that petroleum existed in that neighborhood, but previous explorations produced no result. In September, 1884, M. Debay, a Belgian mining engineer, who was accidentally in Cairo, was sent to report on the possibilities of the practical working of the oil beds. He reported favorably, and considered the experiment was worth a preliminary expenditure. Accordingly, he was intrusted with £3000, and was charged to engage workmen for the purpose of ascertaining the value of the discovery. Nothing was heard of it for some time, but, after considerable trouble, M. Debay, with 30 Belgian workmen, was dispatched from Suez toward the end of November, 1885, the Government agreeing to defray all expenditure until March 1. In spite of much discouragement M. Debay appears to have worked with considerable energy in discharging material and establishing his small colony on a spot which was absolutely destitute of human habitation, vegetation or water. After carefully selecting a spot, he commenced boring at a distance of 30 yards from the sea on January 15. After penetrating successively through gypsum, containing veins and nests of sulphur, shale, green and blue clay, limestone and sandstone, the drill on February 25, the day before the expiration of the period limited, fell suddenly 40 cm. and petroleum rose to a point 2 m. above the sea level. When that news was received an expedition was sent under Nubar Pasha, and comprising his son, Boghos Pasha, civil engineer;



NEW PLANER AND MATCHER, BUILT BY THE EGAN CO., OF CINCINNATI, OHIO.

wide), and is highly commended on this account for general use in any factory, especially country mills, where first-class planing and first-class matching are a necessity. The changing from a planer to a matcher, and vice versa, can be almost instantly done, and no time is wasted. The pressure-bars are arranged so as to do very smooth work without any clipping of ends in either hard or soft wood.

We show in the cut a general view of the machine. The head or main cylinder is of steel, double belted, and is made with improved lip, so that it does very smooth and perfect work. The journals are large, and of best special cast steel, and run in self-oiling boxes lined with Babbitt. The feed is very powerful, and consists of four large feeding rolls, all geared in a superior manner. There are no expansion links on the machine. The bed is raised and lowered in the frame on jibbed slides, and any wear can be instantly taken up. The pressure-bars are very perfect and come close up to the knife on both sides of the head. The matcher spindles are arranged in a very superior manner, and the belts pull against the boxes. The side heads can be taken out of the way in a half-minute, and the machine will match or edge the full 14 inches in width. The arrangement for taking the heads out of the way is something new and novel, and insures convenience, speed and durability. The matcher clip is of improved construction, and used in connection with the solid matcher bit, always works smoothly without tearing out or clipping. For carpenters, planing mills, carriage builders and wood-workers in general requiring a hard or soft wood planer the machine is eminently suitable, as it will plane very wide stuff and stand up to almost any kind of cut, and when arranged as a matcher will match 14 inches wide. It can also be very quickly set for working patent siding, carpenters' moldings, beading or any work of this class. The tight and loose pulleys are 12 by 6½ inches, and run 900 revolutions per minute.

Excessive Pressures on Bearing Surfaces.

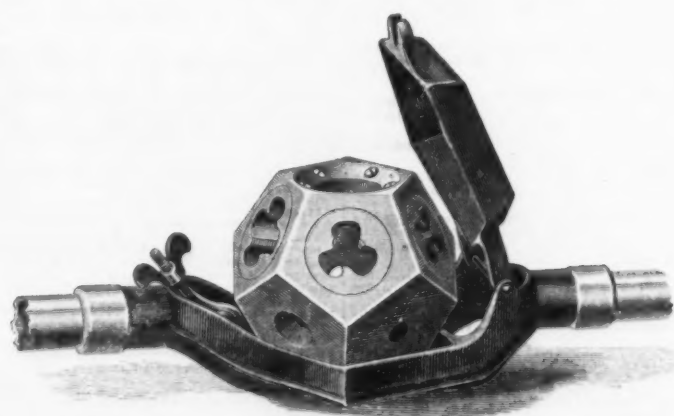
It is generally found on examining bearings that have heated that an alteration in figure has to be explained, and the heating is usually given as the cause. A little consideration, however, will show that, instead of this causing the change of shape in the brasses, the converse is more reasonable, and the change of shape causes the heating; for, supposing a shaft to have such a vertical load on it as will cause failure of the brass by compression, the intensity varies from the middle, where it is nil—that is to say, the portion immediately under the shaft is the most compressed and tends to bring the sides in. This is recognized by some engineers, who make it their practice to secure the sides of the brasses by substantial screws in such a manner as to prevent any closing on the shaft. Many of the well-known alloys give excellent results where the only requirement is a bronze of suitable hardness to best resist wear and reduce friction; but such mixtures are usually deficient in the other qualities necessary for purposes of machinery bearings, such as rigidity and resistance to compression. Where the harder alloys are used they are frequently introduced in pellets, and are backed up by a brass of suitable strength and thickness; but the tendency in recent years seems to incline toward the use of substantial bronze or gun-metal bearings

steam fitters, and is adapted to thread six sizes of pipe (¼, ⅜, ½, ¾, 1 and 1¼ inches). The dies are secured by set-screws in six faces of a dodecahedron or 12-sided regular figure made of malleable iron. In the other six faces of this block are holes which serve as guides for the dies opposite them. The stock, also constructed of malleable iron, is adapted to secure the die-block firmly in any of its six working positions. The prin-

stantly press against the shaft, which will engage the clutch, and the registry will begin and continue till the pressure on the end of the shaft is relieved.

Hydraulic Power in Manufacturing Establishments.

In the lifting and moving of weights a more or less direct motion is much to be preferred to rotary motion, and it is in this

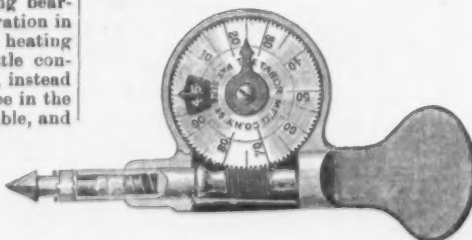


The Globe Die Stock, Made by the Globe Tool Co., Indianapolis, Ind.

cipal advantage claimed for this tool is that it has no loose parts liable to be mislaid or lost. It is also recommended for the ease and readiness with which it can be adjusted for any of the six sizes of dies which it contains.

The Tabor Revolution Counter.

The demand for a good, simple stop-motion revolution counter that can be put on the market at a price low enough to be within the reach of all mechanics, has led to the manufacture of the device which we

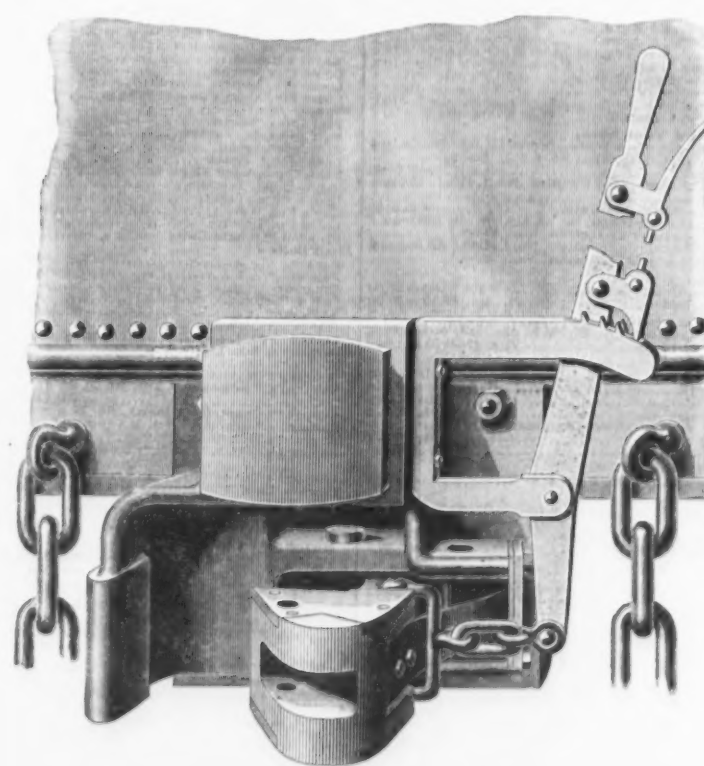


The Tabor Speed Indicator, Made by the Tabor Machine Co., New York.

show in the accompanying cut. It is made by the Tabor Mfg. Co., of 111 Liberty street, New York, and requires little explanation. There are two dials. The upper one is graduated from 0 to 100, and registers units; the lower dial is graduated from 0 to 50, and registers hundreds, making a continuous count of 5000 possible. The reading on the upper dial is through the opening in the upper dial. The index finger indicates the count on the upper dial; for instance, if the point in the opening through the upper dial indicates 45 on the lower dial, and the index finger points to 25 on the upper dial, the reading will be 4525 revolutions. In order

respect that the applications of hydraulic power are so much superior to steam. A direct-acting ram with a system of pulleys for longer lifts are not only easily applicable, but easily worked; and, except in the case of continuous working, require no stationed attendant. The moving parts, too, are few in number, and the motions of these are of the most elementary character. Some exceedingly simple forms of cranes have been devised for the lighter work of bridge yards and fitting shops, but it is perhaps in the foundry that the special advantages of hydraulic power are most clearly noticeable. Here the cranes are disposed in such a way as to collectively command the entire floor, and, while affording the means of passing the ladle about in any direction that may be required, the system also allows of the simultaneous use of each crane in its respective position, thus preventing much of the delay that arises through the usual overhead crane being employed at one end of the shop while it is required at the other.

One strong point in favor of hydraulic machinery is that it is equally efficient at whatever distance from the source of energy it may be placed. The necessary pumping machinery may, therefore, be placed in any out-of-the-way portion of the works. With steam machinery a separate boiler in close proximity to the machine is necessary, and this brings with it a host of troubles in the form of coal-dust, smoke, vapor and a dripping of water which play havoc with the machinery in the shop or entail a considerable amount of additional labor in cleaning. It is often urged against hydraulic power that, as a steam engine is necessary, the work might as well be done without the intervention of any other power. But, besides the advantage of easily distributing the power which the hydraulic system affords, there is also the consideration that a very much smaller engine working continuously will do the work which would otherwise require an engine up to the full requirements



THE WILKINS LOCOMOTIVE COUPLER, Made by the Eames Vacuum Brake Co., Boston, Mass.

away of the tender frame or any alteration whatever, using the same bolts and nuts for attachment that are in use for the ordinary draw castings. If the coupler is used in freight service the hook can be made rigid by the use of an ordinary coupling pin, and a link and pin used as in common freight draw-bars; or, if desired, the hook can be taken out and link and pin used in its place. This is very desirable when two engines are coupled together for heavy service.

The coupler is in use on the Fitchburg, the New York and New England, the Concord, the Central Vermont, the New York,

Col. Scott Moncrieff and Major Western, both of the Egyptian Public Works Department; Mr. Mitchell, geologist, and Mr. Hooker, chemist, to report upon the discovery. Their examination has resulted in the following facts: That petroleum undoubtedly exists; that the geological formation of the country is favorable to the existence of larger quantities at lower depths; that the store of oil is generally distributed over a large area in the neighborhood; that under existing unfavorable conditions a single source yields about 2 tons daily; and that the specific gravity is 0.88.

Current Hardware Prices. April 21, 1886.

Cartridges.—See Ammunition.

25 %	Casters.
25 %	<u>Bed.....</u>

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MANUFACTURING.

Iron and Steel.

The statement that Carnegie, Phipps & Co., Limited, intend to build two large blast furnaces on the McCandless property, in Pittsburgh, which they have recently purchased, is denied by a member of the firm, who states that the only use they intend to make of it at present is for the storage of materials.

Messrs. Brown & Co., proprietors of the Wayne Iron and Steel Works, Pittsburgh, have secured the contract for 100 tons of rolled safe plates to be used in the vaults of the new Gallatin Bank, Wall street, New York.

Of the eight blast furnaces in Sharpsville, Pa., five are in blast and three out of blast. The following are in blast: Sharpsville, Spearman No. 1, Douglass No. 1, Mabel and Claire No. 1. These furnaces produced week before last 3000 tons of pig iron. This is the greatest output in the history of the Shenango Valley, and considerably exceeds the greatest output of the eight furnaces in Sharpsville when they were all in blast a few years ago.

The Youngstown Rolling Mill Co., of Youngstown, Ohio, have secured a contract from D. P. Reighard, of Pittsburgh, for 800 tons of hoop iron.

Stack No. 4 of the Allentown Iron Co., Allentown, Pa., is being rebuilt, and will be put in blast shortly. Stacks 1 and 5 are now in operation.

The Fisher Foundry and Machine Co., of Pittsburgh, have added a new building, 65 x 120 feet, to their shops, which will be completed about May 1. It will be fitted with a crane running the whole length of the building, the first of the kind in Pittsburgh.

The corporate existence of the Detroit and Lake Superior Iron Mfg. Co., Detroit, Mich., having expired by limitation in April, 1886, a renewal organization has been completed under the name of Gaylord Iron Co., and the business will hereafter be conducted in that name with the same officers and management as heretofore.

The Hartman Steel Co., Limited, Beaver Falls, Pa., have begun the erection of a brick building, 60 x 188 feet, two stories high, for the purpose of introducing machinery and manufacturing wire door mats, steel signs and other specialties in steel, under patents which they have lately purchased a controlling interest in. The new works will employ principally boys and girls.

The relining of Isabella Furnace No. 2, at Pittsburgh, which was begun about a month ago, will be completed about May 1, when the furnace will immediately blow in on Bessemer iron.

Smith Bros. & Co., proprietors of the La Belle Steel Works, Allegheny, have commenced preparations for extensive improvements in their mill. The first change is the tearing down of the old blacksmith shop and polishing-room. On this is to be erected a finishing department and large hammer. The building containing these will cover a tract nearly 200 feet square, and will be made of iron, with a corrugated-iron roof. The hammer will be of the largest size, capable of working ingots weighing 2000 pounds. The other improvement is a large open-hearth furnace. It will have a capacity of from 15 to 20 tons, and the building will be about 300 x 200 feet. These improvements will cost from \$60,000 to \$100,000.

The directors of the Etna Iron and Nail Co., Bridgeport, Ohio, have procured a change in the corporate name of the company, eliminating therefrom the word "Nail," and substituting for it the word "Steel," thus forming, as a new name, Etna Iron and Steel Co. The object of the change is to rid the name of a misleading element and cause it more correctly to accord with the nature of the company's business, nails not being made at the works, but soft steel forming a part of their product. The change in name does not involve changes in any other respect.

The statement made in a recent issue that the Millerton Furnace, at Ironside, N. Y., had blown out was an error. The furnace is running successfully, making from 25 to 30 tons of iron per day.

Unusual interest is being shown by the members of the Amalgamated Association of Iron and Steel Workers in Pittsburgh in the election of delegates to the annual and scale convention to be held there in June. The convention, in addition to fixing the scale of wages for the year beginning July 1, will elect officers. The indications are that President Weihe and Secretary Martin will be re-elected without opposition. It is stated on good authority that the association will demand at this meeting the restoration of the 10 per cent. reduction which they agreed to a year ago.

The Sing Sing, N. Y., *Republican* reports that Mr. E. C. Blakeslee has decided to build a new and extensive foundry and continue his connection with the iron business. The new establishment will be located west of the railroad track, nearly in front of the foundry with which he was until lately connected, on land which he has recently purchased.

Henry Phipps, Jr., of Carnegie, Phipps & Co., Limited, Pittsburgh, Pa., has donated the sum of \$25,000 toward improving the parks of Allegheny City.

The weekly report of Secretary Wise, of the Western Nail Association, issued on the 15th inst., shows 1055 machines in operation at the 17-cent scale, an increase of 30 since the previous report.

Bradlee & Co., Empire Chain Works, Philadelphia, have bought a property adjoining their present premises, and are erecting thereon a building 52 x 150, which they expect to occupy about the middle of June. The works will be very completely equipped. They are now filling an order for 400,000 pounds heavy chain for the Lighthouse Department, besides others for large quantities of dredging chain. This firm have also

supplied a quantity of their chain to the Montreal Harbor Department.

The Pittsburgh Steel Casting Co., of Pittsburgh, are making the castings for a very large testing machine. It is for the Union Bridge Co., of Athens, Pa. The steel cylinder alone will weigh over 4 tons. It will have a capacity of 1,200,000 pounds. The above company have advanced the wages of the men in the converting department to the old price in effect previous to last fall. The increase varies from 10 to 25 per cent.

Lucy Furnace No. 1, at Pittsburgh, will blow out in a few days for repairs.

At the annual meeting of the Chester Rolling Mills, held on Saturday, April 10, the following officers and directors were elected to serve during the next fiscal year: Samuel A. Crozer, president; Charles B. Houston, treasurer; Richard Peters, Jr., secretary; Thomas J. Houston, general manager. Board of Directors: S. A. Crozer, W. H. H. Robinson, George H. Crozer, C. B. Houston, O. J. Houston, R. Peters, Jr., S. A. Crozer, Jr.

Messrs. Gordon, Strobel & Laureau, of Philadelphia, are building new heating furnaces for the Jamestown Axe Co., at Jamestown, N. Y.

The Cambria Iron Co., of Johnstown, Pa., have formed a joint-stock company, with \$500,000 capital, to work valuable manganese ore in Arkansas, near Batesville. The company will be known as the Johnstown Manganese Iron Co. A railroad 13 miles in length will be built immediately to connect with the mines.

Messrs. Cooper & Hewitt's Pequest Furnace, N. J., 16 feet bosh, made a yield last week of 487½ tons of pig iron, using as fuel three-fourths Lehigh coal and one-fourth coke. The iron is mostly 2 X and gray forge.

The Oxford Iron and Nail Co.'s Works, Oxford, N. J., are turning out about 1000 kegs of nails daily. All their works, except the old No. 1 blast furnace, are now in full operation, employing over 700 hands.

Machinery.

The Westinghouse Machine Co., of Pittsburgh, have notified some of their employees that their request has been granted for an increase of wages to the amount paid previous to the reduction in November, 1884, equivalent to 11½ per cent. advance over the present wages. This, however, affects only the molders and a portion of the machinists. The firm is so crowded with orders that the works are running day and night.

The shoe shop of the Pennsylvania Railroad Co., at Altoona, Pa., was burned last week, causing a loss of about \$15,000.

The Eames Vacuum Brake Co., of Boston, report that their business and output during March was equal to more than two-thirds the entire business of last year, and that more orders remained unfilled at the end of the month than they had at the beginning.

The Cleveland Machine Co., Cleveland, Ohio, report a satisfactory condition of business and a promising outlook. The increase in their business the last eight months warrants a doubling of their capacity. In their drop-forging department they are especially busy. They have equipped their works with a new Cummer engine, made by the Cummer Engine Co., Cleveland, Ohio. The works, besides handling general output, are busy upon special work for the Powell Perfect Coupler Co., of Kansas City, which company are equipping 150 cars with their coupler for the Kansas City, Fort Scott and Gulf Railway. The company are also doing the drop-forging work for the Marks automatic car coupler.

Epping, Carpenter & Co., Limited, steam pump manufacturers, of Pittsburgh, Pa., are furnishing the Keystone Brewing Co. with pumps for the entire plant. They are also building two large hydraulic pressure pumps for Park, Bro. & Co., and one of the same style for the new steel plant of the Volta Iron Co., Limited, all of Pittsburgh.

The Streater Novelty Works, of Streater, Ill., are putting on the market a new engine for which several important advantages are claimed.

The Brown Hoisting and Conveying Machine Co., of Cleveland, Ohio, report orders in hand beyond their present capacity. The company will shortly erect shops equipped with the latest and most improved machinery. Among work now nearing completion are several hoisting machines for France, Belgium, Spain and the British Provinces, and for Boston and Pittsburgh, for coal and iron furnace use.

The Peerless Mfg. Co., of Louisville, have completed and shipped one of their Rice sand-molding machines to the Hewitt Mfg. Co., of Chicago, for the manufacture of the Hewitt bearings and other similar castings for railroad cars. They have also shipped one large molding machine to the Harrisburg Car Mfg. Co., of Harrisburg, Pa. The Peerless company now have under construction several molding machines of different sizes to be shipped to different parts of the United States.

Lord, Bowler & Co., of Cleveland, Ohio, are enjoying a very satisfactory volume of business, with special activity in their special quarry machinery department. They have some heavy orders in hand, are running full, and regard the immediate future as very promising. Their improved machinery for hoisting, sawing and turning out grindstones meets with good demand from contractors and quarrymen.

The S. C. Forsaith Machine Co., Manchester, N. H., general machinists and builders of power spring hammers, Abbe's patent bolt-forging machines, and engine lathes, report that they have had more call for machinery of all classes for the past six weeks than for three months before.

The Knowles Steam Pump Works, Warren, Mass., have an order to build a new pump to weigh 90 tons.

The Sneed & Co. Iron Works, of Louisville, Ky., are just putting in a Buckeye engine, made by the Buckeye Engine Co., of Salem, Ohio. This engine was in the Exposition

building, and helped to run the greater part of the machinery there. This, we understand, makes the 50th Buckeye engine now in Louisville.

The Heine Safety Boiler Co., of St. Louis, Mo., have sold since the beginning of the year 21 boilers, mostly of large powers, the aggregate being 4200 horse-power, and the demand is rapidly increasing.

Recent sales of the N. O. Nelson Mfg. Co., of St. Louis, Mo., include a complete wood-working plant except motive-power to Rapid City, Dak.; 20-horse-power portable engine and boiler, 10-inch steam pump and miscellaneous machinery for the United States Government, to go to a frontier post in Texas; steam pumps to Portland, Ore., Sacramento and Stockton, Cal., and to Hickman, Ky.; large sawmill complete to Los Angeles, Cal.; entire machine-shop outfit, including motive-power, and one or two wood-working machines, to Dempster Wind Mill Co., Beatrice, Neb.; steam boilers to Eureka Springs, Ark., and Red Oak, Iowa; engine lathes to Wilson, Kan., Decatur, Ill., and Kansas City. The company have about completed the erection of a system of fire protection at the Mississippi Planing Mills, of St. Louis, including several hundred of the Nelson automatic sprinklers attached directly to city water supply, and have contracts in hand for supplying the Exposition building.

The Harlan & Hollingsworth Co., of Wilmington, Del., who are building the machinery for Mr. W. K. Vanderbilt's new steel steam yacht, have the work well advanced. It will consist of a set of inverted, direct-acting, surface-condensing, three-crank, compound engines having three cylinders, one high-pressure in the center and low-pressure cylinders at each end of same, with Thom's valves on high and low pressure cylinders, worked by Joy's valve gear. The cylinders will be 32 and 45 inches and 45 inches in diameter, with a common stroke of 42 inches.

The Cummer Engine Co., of Cleveland, Ohio, have recently received orders for a 287-horse-power Cummer automatic engine for Wahl Bros., of Chicago, Ill., and a repeated order for a 215-horse-power engine from the Marshall Roller Mills, of Marshall, Mich. The Cummer Co. have also received orders for nine of their Simplex automatic engines within the past few weeks—six to go to Chicago, two to Milwaukee and one for Messrs. Taylor & Boggis, of Cleveland, the powers ranging up to 50 horse-power. They have also just received an order for two complete hoisting plants for Messrs. H. M. Benjamin & Co., of Milwaukee, Wis. Among the Cummer Engine Co.'s late shipments are a 50-ton refrigerating plant for the T. Walker Brewing Co., of Cincinnati, Ohio, and a 215-horse-power automatic engine for the Peninsular Car Co., of Detroit, Mich. They report their sales for the Jonathan Mills Universal flour dresser constantly on the increase, having sold double as many since the 1st of January as for the corresponding period last year.

Hardware.

The Tubular Blade Co., Tribune Building, New York, have been for some time preparing to put tubular scythes on the market, and hope to be able to do so before long. The machinery is being built by the Styles & Parker Press Co., Middletown, Conn. The tubular blade scythe is stated to require but three heatings, drop forging being substituted for hand and trip hammer work. In its manufacture strips of sheet steel are used, one side being rolled thin to form the back, an operation which is performed by an ordinary beating machine. The back is turned over and the welding done (the back being hollow except at the ends) by drop forging in dies of the required shape. The required curve is given to the scythe by a simple operation in a machine designed for the purpose. The distinctive claims made for the tubular blade scythe are that it costs less to manufacture, that it is lighter and at the same time stronger on account of the substitution of the tubular or hollow back for the ordinary bead, and that for the same reason it makes it way easier through grass and does not lodge sand or dirt.

The Buffalo Hammer Co., Buffalo, N. Y., have purchased a large lot at Black Rock, and will at once begin the erection of works with double their present capacity. They will also manufacture a line of hatchets, stone and masons' hammers, sledges, railroad-spike mauls, &c. They expect to be in full operation in their new works by July 15. They have added a large outfit of new machinery. Their new location is adjacent to several railroad stations, giving excellent facilities for shipment both East and West.

Miscellaneous.

Byram & Co., of Detroit, Mich., are now making a Colliery cupola furnace for Messrs. J. B. & J. M. Cornell and one for Messrs. C. H. Delamater & Co., both of New York.

At a meeting of the stockholders of the Manufacturers' Natural Gas Co., of Pittsburgh, held last week, an increase in the capital stock was ordered from \$300,000 to \$600,000, and also an addition to the bonds of the company of \$150,000, the proceeds to be applied to the construction of the new lines which the company are putting down from the wells in Washington County to Pittsburgh.

The Philadelphia (Westinghouse) Natural Gas Co., of Pittsburgh, declared their usual monthly dividend of 1 per cent. last week. This company have a capital stock of \$5,000,000.

The iron-ore mines of the Manhattan Mining Co., at Sharon Station, near Amenia, N. Y., are to be sold under foreclosure at Poughkeepsie on the 11th of May.

The Chicago Repeating Firearms Co., with a capital stock of \$500,000, will start a factory at Grand Crossing for the manufacture of the Chaffee-Reece and Whitmore hammerless shot gun, and ammunition for sporting and military purposes. The works will occupy about 6 acres of ground, and are expected to have a capacity to produce annually about 50,000 magazine rifles, 10,000 shot-guns and 50,000,000 cartridges. The president of the company is Gen. John A. Logan, and the other incorporators are Ex-Gov.

John M. Hamilton, Col. H. H. Evans, Major A. N. Reece, Gen. Joseph Stockton, Gen. W. E. Strong, Major R. W. McClaughry and Gen. J. N. Reese.

Of the 10,832 ovens in the Connellsville region, there were 1117 idle last week, classified as follows: Pool ovens, 478; furnace ovens, 240; independent ovens, 272; old ovens, 127. The average daily shipments are 820 cars, of which the syndicate ships 615 and the outside producers 205.

Mr. Daniel Hemingray, of the Hemingray Glass Co., of Covington, Ky., was in Pittsburgh last week on his way home from an Eastern trip. Mr. Hemingray states that it is possible his works will be removed to Pittsburgh if the well which they are now sinking proves a failure. He says his firm are compelled to use Pittsburgh coal, and cannot successfully compete with the manufacturers of Pittsburgh who use natural gas. His works employ about 400 men.

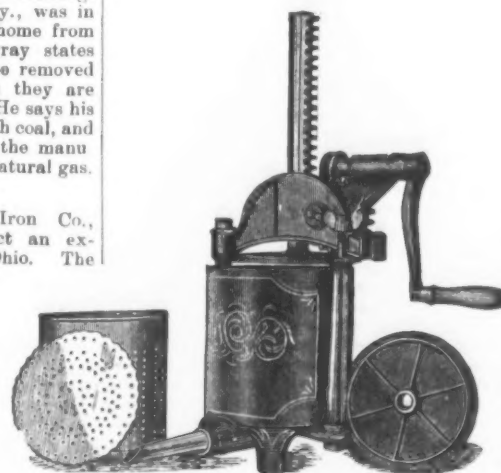
The American Tube and Iron Co., of Middletown, Pa., will erect an extensive plant in Gibsonville, Ohio. The

product will be casings, tubing and pipes of all sizes and kinds. The main building will be 300 feet long by 100 feet wide, and the finishing mills will be 200 feet long by 80 feet wide, and all 20 feet high. A force of 50 men will be put to work at once on the foundations, and all work pushed as rapidly as possible, as the company are anxious to get into the market, and hope to secure the contract for the gas mains to be used in bringing the natural gas from Butler to the Mahoning Valley, for which a company has already been organized.

The Ohio Gas and Fuel Co. and the Ohio and Pennsylvania Natural Gas Co., both of Youngstown, Ohio, have consolidated under the name of the Ohio Natural Gas Co., with a capital stock of \$100,000. The first company got \$53,000 and the second \$47,000 of the stock. The National Tube Works, of McKeesport, Pa., will furnish the pipe for the company's lines.

The New York *Journal of Commerce* does not believe in the Saturday half-holiday movement. The editor says: "The theory is that the toiler needs more time for rest and mental improvement. A few would doubtless use the vacation wisely to this end,

the shaft, on which the pinion is fixed, the pinion-shaft having its bearing in the cross-beam. By means of this construction it is claimed that by revolving the worm by means of the crank a slow, powerful and positive motion is communicated to the rack, which is well suited to the purposes of the machine. A perforated strainer is provided with a follower to be used in pressing, to be inserted in the barrel. Each strainer is provided with a follower, to be used when the machine is operated as a



Happy Thought Stuffer and Press.

press. For use in pressing there is also a perforated false bottom, with rings cast in its under side to raise it above the bottom of the barrel.

A New Grapple.

James Carpenter, Moravia, N. Y., is putting on the market a grapple of novel construction, of which he is patentee, which is illustrated in the accompanying cut. It is intended for use by two persons in grasping, lifting and carrying between them a heavy body, such as ice, boxes of all kinds, barbed wire bundles, &c. In its use two persons take hold of the bar, which is nearly 4 feet long, at opposite ends, the grappling rods being opened by turning the oscillating rods which are shown in the cut. Then, bringing



Carpenter's New Grapple.

but the great mass would not devote the spare hours to any such useful purpose. This is not mere theory; it has been tried on a smaller scale, and those who have had the best opportunities for observation have witnessed the failure. We have conferred with a large number of employers who entered into the early-closing movement when it was first proposed in the full belief that the released workmen, clerks and shop girls would be benefited by the change. It has not produced this result, even in a majority of cases. It led everywhere and always to increased dissipation and waste of earnings, the exceptions being hardly more than sufficient to prove the rule."

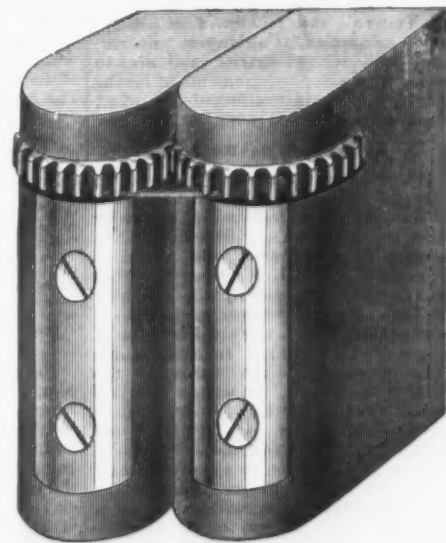
Hardware Novelties.

The Happy Thought Sausage Stuffer and Press.

This article, which, fully named, is the Happy Thought Sausage Stuffer, Lard, Fruit and Jelly Press, is made by the M. L. Edwards Mfg. Co., Salem, Ohio, its name indicating its use. In its construction a vertical cog rack is supplied at its lower ends with a suitable follower for use in stuffing, and is operated through an opening in a swinging cross-beam. At the bottom of the base, and opposite each other, are columns which separate and receive the cross-beam, to which the working parts of the machine are attached. At the bottom of the base a hollow projection is provided with which a nozzle is connected for stuffing purposes. This nozzle is to be removed when the machine is used as a press. The base on the inside of the barrel has a suitable depression extending across its middle, and communicating with the hollow projection, to permit the insertion of the nozzle, and at the same time providing for the flowing of the expressed liquid to the middle of the bottom and for the ready escape of the same. The cross-beam is provided at one end with an open slot that passes over a wrought-iron stud which is cast integrally with the columns and is securely held in place by a thumb-nut. At the other end of the cross-beam it is provided with an orifice which engages a stud on the column, and forms a bearing that permits the ready swinging of the beam entirely out of the way when filling the barrel or removing material therefrom. The cross-beam has an opening on its under side to admit a pinion that meshes into the rack, and has also an arm, at the end of which is formed a bearing for the crank-shaft, provided at its inner end with a worm which meshes with a worm-wheel on

Improved Screen Hinge.

J. B. Shannon & Sons, 1020 Market street, Philadelphia, are putting on the market the screen hinge represented in the accompanying illustration. It consists of a flat connecting plate which extends between the two centers of the pinions shown in the cut. This holds the two wings of the screen together, while the pinions engaged keep them apart and complete the hinge motion. It is made in polished brass for 1-inch wood. It will be seen from its construction that it admits of the wings of the screen being set at any angle, while a close joint is maintained between the parts. The manufacturers state that in applying this hinge to the screen it is necessary simply to run a saw scarf into the frame of sufficient width and depth to receive the pinion shown at the top, and to mortise in for the lower parts of



Improved Screen Hinge.

the hinge, which are held in place by the screws shown in the illustration.

Every acre of pine land in Michigan has been purchased from the Government. It is stated that Michigan men have purchased nearly a million and a half of acres of the long leaved pine lands of Louisiana and Mississippi lately at a cost of \$1.25 per acre—a total of something like \$1,800,000 having been paid for them. It is believed that the standing timber aggregates 15,000,000,000 feet of lumber.

WASHINGTON NEWS.

(From Our Regular Correspondent.)
WASHINGTON, D. C., April 20, 1886.

An active canvass has been going on since the report of the Morrison bill to the House by the friends and opponents of the measure, and upon this divers speculations have been indulged in as to its probable fate. At first the majority of the Committee on Ways and Means were very confident of their success, but later doubts were entertained as to the influence of local opinion upon the action of some of their quondam adherents. Still later the Protection Democrats under Randall formally announced their determination to oppose the bill. This step was predicated upon, as they claimed the pledges of about 24 Democrats who would unite in the movement. The next step was a conference with the President by some of the free-trade leaders. The President, according to their version of the result of the conference, said that the Democratic party was pledged to tariff revision, and, in his opinion, the bill was a step in that direction. This general expression of approval of the measure has given great encouragement to Morrison and Carlisle. There is no doubt with the patronage of the Administration thrown around the question in the House the free-traders will be placed at a great advantage, and Randall and his friends will be in the awkward predicament of fighting the Administration. This is the most serious phase of the situation for the Protection Democrats.

The total present membership of the House is 323. A majority would therefore be 162. The Republican vote is 141. It is possible that three Republicans will vote for the bill. In that event it will require 25 Democrats to vote with the 138 Republicans to defeat the bill on a full vote of both parties. The results of the canvass of the friends of the bill among the Democrats are stated as follows: Ohio, 11 Democrats, Pennsylvania, 5, Scott and Snipe having declared against the bill, and Storm still being on the fence. New Jersey, 2; they claim 3, but Piddock is not certain. New York, 7; at present 5 can only be regarded as certain. West Virginia, 2, but one is reliable. Louisiana, 2, but one can be relied upon. California, 1. This foots up 30 Democrats counted, but of which number at least 5 are by no means certain, and whose convictions might be very seriously diverted by the magnetic attraction of Executive favor. From the Republican column the free traders count on Nelson, White and Wakefield, of Minnesota. Anderson, of Kansas, was in this category, but he has now come out strongly against the bill. The Minnesota statesmen may get back to a safe anchorage before the vote shall have been reached. The Randall party are still quite confident, but since the announcement of the President's interest in the bill as a party measure there has been a very evident inclination to await developments.

THE CARTON DECISION.

The recent decision of the Supreme Court of the United States declaring the cost of carton and other inside coverings not elements of dutiable value has been formally announced for the government of customs officers by the Secretary of the Treasury. In transmitting the decision to customs officers the Secretary says:

"Appended hereto will be found a copy of the decision of the United States Court * * * which involves the question as to the liability to duty of cartons and other inside coverings of imported merchandise, and the cost of packing the same in outside packages."

"The merchandise which was the subject of the suit consisted of gloves and hosiery, put up in cartons or paper boxes of one-half dozen and one dozen pairs each. The importers on making entry at the custom-house excluded the cost of such cartons and packing charges, while the appraiser, in returning the dutiable value of the goods, added to such entered value the cost of the cartons and packing, whereupon duty was assessed by the collector on the addition thus made."

"It will be seen that the Supreme Court now decides that such action was erroneous, and that under the provisions of Section 7 of the act of March, 1883, neither the cost of the cartons and other inside coverings nor the charges incident to the packing of goods for shipment are elements of dutiable value. The rule thus laid down in this decision will be applied to all future importations and unliquidated entries, and also to all entries where the requirements of law as to protest, appeal, institution of suit, &c., have been fully complied with."

RULE AS TO CARTONS.

The Secretary of the Treasury, in reply to an interrogatory as to whether a customs officer was authorized to separate the value of boxes containing imported cigars when the invoice does not specify the value of the cigars and of the boxes separately, but where the entry lodged by the importer specifies the cost of the boxes, and claims a deduction thereof from the invoice price of the cigars, has replied: "In cases where the invoice specifies the value of the goods free on board, or where it gives the gross value of the goods, including the cost of boxes, &c., you are authorized, until further instructions, to allow importers at their option to specify in their entries the value of the merchandise *per se*, and the cost of the boxes, cartons, &c., separately, subject, of course, to the requirement of law concerning appraisements."

THE EFFECT OF THE CARTON DECISION.

The operations of the decision exempting outer coverings from duty will tend to further weaken the execution of customs laws. The department is already in receipt of numerous inquiries as to its effect in a multitude of cases, all of which indicate that the decision will furnish numerous loopholes for the evasion of duties, will facilitate undervaluations and reduce the revenue.

THE BILL ABOLISHING THE DRUMMERS' TAX.

The James bill to permit commercial travelers to sell goods by sample to dealers without paying local licenses was favorably reported to the House to-day by Mr. Caldwell, of Tennessee, from the Committee on Com-

merce. The report says it is not conceded that a State has the right to levy duties upon importations from another State under the name of license tax or penalty. Although not discriminating in favor of residents, such taxes are in conflict with the Constitutional power of Congress to regulate commerce between the States. Decisions of the Supreme Court are quoted sustaining the authority of Congress to enact such a law, and attention is called to the fact that contracts for sales made by commercial travelers are not consummated within the State where made. Such sales are not taxed when made through the mail, by sample, &c., and there is no reason why they should be taxed when made by commercial travelers. The minority report has not yet been filed.

English Capital in Alabama.

The latest investment of English capital in iron-making in the United States is in Jones's Valley, Ala., on the line of the Alabama Great Southern Railroad, 12 miles southwest of Birmingham. It promises to have a more successful issue than has usually been the fate of such ventures. This hope that the enterprise will be a success is based upon the fact that the management is likely to be in the hands of Americans. The *Iron Age* long ago proved by facts that nowhere in the United States had such undertakings been a success when managed solely by native Englishmen, fresh from their own manufacturing, where labor and customs are so different from those of this country. The enterprise to which I refer has just been chartered as the De Bardeleben Coal and Iron Co., and the charter members are Henry F. De Bardeleben, Birmingham, Ala.; Robert Adger, I. Ellison Adger, David Roberts, Moses E. Lopez, Jos. S. Murdock, Augustine T. Smythe, John H. Murdock, all of Charleston, S. C.; W. S. Manning, Spartanburg, S. C.; Geo. S. Brown, Baltimore, Md.; Collin C. Wyllie, John F. Gordon, Alfred Parish, Dillwyn Parish and E. H. Watts, of London, England.

It is seen from this list of names that a large part at least of the charter members are Americans. Mr. Smythe is an Englishman who has been for some years engaged in mining and shipping phosphate rock. The other names from Charleston are among the best of that city. Mr. De Bardeleben is known as the most enterprising man in Alabama, who has made a success of every enterprise he has undertaken, and has risked hundreds of thousands of dollars in developing the mineral resources of his State. With a fortune already large and an assured income from his factory at Prattville that he could have enjoyed in quiet and ease, he chose rather the exciting course of life which, whether it has more materially benefited him or not, has certainly benefited his State. The capital stock of this company is \$2,000,000, actual cash, or its equivalent. The field of operations is to be near Jonesboro', on the Alabama Great Southern Railroad. Mr. De Bardeleben there owns and puts into the company about 30,000 acres of coal land and 12 miles of limestone or red fossil iron ore. He puts this in at \$500,000, the sum it actually cost him several years ago, as he shows by his deeds, and takes stock therefor at that sum.

The coal field in which these coal lands are located is not strictly the Warrior field. It is detached therefrom by an uplift of nearly vertical rocks, and is locally called the Little Basin. Though mentioned by the writer in a lecture before the Cooper Institute in 1871-72, it has never until lately been brought into prominent notice or thoroughly examined by any geologist. Its discovery and location is due to Mr. Giles Edwards, of Woodstock, Ala. It is a trough about 13 miles in length, about 3 miles wide at one end and 1½ miles wide at the other. It is a regular basin, the coals dipping on the east side to the northwest and on the west side to the southeast, so far as explored, and from appearance of the rocks becoming flat in the center. The dip on the east side is about 6° and on the west about 15°. There are known to be at least three workable coals in this area, one of which certainly makes a good coke. Mr. Edwards claims even that it is much superior to Pratt coke. These coals all outcrop in a comparatively narrow area, and, as this is uniform wherever explored on both east and west sides, there is little doubt that the continuity will be preserved underground, and that all of them may be worked from the same shaft. The following are sections of these seams:

No. 1 seam.	No. 2 seam.	No. 3 seam.
Inches.	Inches.	Inches.
Coal.....12	Coal.....7	Coal.....10
Slate.....3	Gray sandrock 6½	Slate.....3
Coal.....14	Coal.....4	Coal.....4
Slate.....1	Hard rock.....9	Slate.....2
Coal.....9	Coal.....12	Slate.....2
Thin parting.....	Thin parting.....	Slate.....4
Coal.....60	Coal.....60	Coal.....16
Fire-clay.....4½	Fire-clay.....3½	Coal.....16
Coal.....8	Coal.....15	Coal.....16
Total coal.....45	Total coal.....101	Total coal.....76

Here, therefore, is a total of 18½ feet of coal, occurring in a cross-section of 75 feet, which can be worked from one shaft. The No. 2 seam is said to be the best coking coal, and the supposition is that only the portion below the hard sand rock will be worked, the mining being in the 3½ inches of fire-clay. This would give a workable thickness of 6½ feet of coal. An analysis of this coal gives:

Volatle matter.....	26.35
Fixed carbon.....	71.28
Ash.....	2.10

Below these coals is another seam 3 feet thick, and above No. 3 is a seam of black-band iron ore 2 feet thick.

The chief veins of red fossil iron ore from which this company expects to derive its supply are three in number and occur in a low range of hills, frequently called West Red Mountain, which are just east of the coal measures, almost in a stone's throw of the first seam of coal. A section across these veins is as follows: Ore, 3 feet 6 inches; clay, 12 inches; yellow ore, 20 inches; red slate, 20 yards; hard rock, 16 feet; ore, 3 feet; rock, 1 foot 3 inches; ore, 2½ feet. These seams of ore dip to the

northwest at an angle of about 65° to 70°. Two analyses of these ores give:

Silica.....	19.18	17.01
Alumina.....	4.01	4.74
Metallic iron.....	54.97	53.17
Manganese.....	0.23	0.43
Phosphorus.....	0.073	0.06

The amount of phosphorus was so low in these samples that Mr. De Bardeleben had the seams dug into and a series of analyses made from specimens some distance below the surface, with as good and better results. Two of these by Dr. Thos. M. Drown and J. Blodgett Britton are as follows:

Metallic iron.....	50.82	55.51
Silica.....	17.38	10.39
Sulphur.....	none	0.08
Phosphorus.....	0.09	0.06
Alumina.....	6.06	5.37
Manganese.....	none	0.44

Immediately to the east of the veins of red ore are large beds of limonite deposited near the Quebec dolomites, which form the central rock of the valley, and these extend in a wide belt up and down the valley for many miles, beds ranging from 10 to 18 feet thick, and at points forming immense boulders. Three analyses of these ores give:

	No. 1.	No. 2.	No. 3.
Metallic iron.....	58.75	59.00	40.34
Silica and alumina.....	3.28	3.10	34.38
Phosphorus.....	trace	trace	trace

The 34.03 per cent. reported in specimen No. 3 was chiefly alumina.

The small amount of phosphorus in these limonites as well as in the red fossil ores have determined the gentlemen named in the first part of this article to commence their operations with the intent of erecting a plant for the manufacture of steel, whether by the Bessemer or Clapp-Griffiths process is not yet positively determined; but should further experiments with these ores prove their continued good quality, the idea is to erect a Bessemer plant of the most improved type. The whole arrangement for the subscription of the stock is complete, and only a few days will elapse until active operations will be commenced. The enterprise will stimulate railroad building. The Mobile owners of the Grand Trunk Railroad have made a contract with New York capitalists by which the completion of that road will be secured. It was originally intended to run from Mobile to Selma, and thence through the southwest part, the best part, of the Cahaba coal field to Elyton. It may now be stopped at Jonesboro' and go thence to Sheffield, on the Tennessee River.

While ushered forth with the somewhat stunning announcement of a \$2,000,000 capital, and perhaps, therefore, to be met with an incredulous eye by many of our Northern brethren, yet this enterprise does not partake of any of the windy character of so many enterprises with high sounding capital. It is composed of solid business men, and is not the sudden offspring of a month, but is the final result of years of negotiation and labor on the part of Mr. De Bardeleben. It has in it more promise of success than such enterprises usually have, and if successful will not only add greatly to the wealth of Alabama, but give a higher character and standing to iron-making in the South.

H. E. C.

Legislation for the Protection of Travelling Salesmen.

A bill has been introduced into the House of Representatives for the protection of commercial travelers against local taxes claimed to be unjust and burdensome, which provide that "residents of each State and Territory solicit from dealers or merchants orders for goods and merchandise by sample, catalogue, card, price list, description or other representation without payment of any license or mercantile tax." This does not apply, it will be observed, to transactions which originate and terminate within any one State, but is confined to contracts and dealings which have their beginning in one State and their consummation in another, and which may properly be said to belong to the domain of interstate commerce, over which the Constitution gives to Congress supreme power of control and regulation.

The main question with regard to this bill, and the only point upon which any plausible objection can be made to it, is that of the right of the Federal law-making power to assume exclusive jurisdiction over a matter so closely related to the government of local affairs. In a sense the authority of a State to tax business interests and business men within its own borders is paramount and unconditional; but that authority is subject at the same time to certain well-defined and substantial distinctions, involving power granted to Congress for the conservation and promotion of the national welfare. The Constitution declares in plain terms that Congress shall have power "to regulate commerce with foreign nations and among the several States, and with the Indian tribes;" and the Supreme Court has several times decided that this implies exclusive jurisdiction, and is in effect a prohibition of State action in that direction. If a sale effected by a drummer were made through the medium of catalogues and samples sent by mail from a wholesale house in New York, for example, to a retail dealer in Texas, the transaction would surely come within the meaning of interstate commerce, and it is impossible to see how the matter can have any different meaning simply because the samples are taken to Texas in a trunk and personally exhibited to the dealer. In either case the transaction does not really take place in the State of the purchaser; the agent only represents goods and names prices, and a memorandum of the order is returned to New York, where the trade is actually consummated. This is manifestly such a proceeding as Congress has a right to legislate upon in an exclusive way, or the Constitutional grant of authority as to interstate commerce is without any practical significance.

In the case of *Welton vs. State of Missouri* it was held by the Supreme Court that a license tax required for the sale of goods amounts to a tax upon the goods, and, therefore, is in conflict with the Constitution so far as concerns goods transported as articles of commerce between different States. The

term "commerce," as defined in this decision, "comprehends intercourse for the purposes of trade in any and all its forms, including the transportation, purchase, sale and exchange of commodities between citizens of different States, and the power to regulate it embraces all the instruments by which such commerce may be conducted. So far as some of these instruments are concerned, and some subjects which are local in their operation, it has been held that the States may provide regulations until Congress acts with reference to them, but where the subject to which the power applies is national in its character, or of such a nature as to admit of uniformity of regulation, the power is exclusive of State authority." In another and later case where the same point was involved and the same decision made, Justice Bradley delivered a special opinion, in which it was held that even where a license tax is imposed equally upon residents and non-residents it is a violation of the Constitution, inasmuch as it is, in fact, a duty upon importation from one State to another, under pretext of uniform taxation. Obviously, local governments have no right to tax individuals who are neither citizens nor residents. Commercial travelers are not taxed, but before they can do business they must take out a license. This is obviously a tax upon the business done by them, and is, in fact, a tax upon interstate commerce. If this is forbidden by act of Congress there is no probability that the taxation of traveling salesmen from other parts of the same State will anywhere be continued. It would be a discrimination against neighboring cities which would undoubtedly be guarded against by State legislation.

The Locomotive Business.

In an interview printed in one of the daily newspapers one of the managers of the Paterson Locomotive Works speak as follows:

There is no reason whatever that I can see why the locomotive works in this country should not be continually busy. That they are not is due to the American spirit of rushing things whenever there is anything to do, and not because the supply of locomotives exceeds the demand. No two railroads use the same kind of engines, and so before we can build we have to await orders and specifications. There is no such thing as building for stock; besides, that would be rather expensive business, locomotives being worth from \$8000 to \$10,000 each. Instead of there being a steady demand for engines the business is either at a rush or is standing still. Railroads use up the stock they have on hand, and then there is a general demand for engines that cannot be supplied at once, and up goes the price. This is bad for us and bad for the railroads. Our machinery, which has stood almost idle for months, is suddenly started with a rush, and it is frequently hard to get the hands together. This lasts for some time, and when the rush is over we can again discharge our hands and twirl our thumbs, awaiting further orders. Just at present we are having a busy season, and railroad companies who ought to have ordered engines when their stock was getting low are beginning to fear that they will not get them in time. That our locomotive shops ought to be always busy can be easily proven. As near as I can approximate them the following are the figures relative to the production of engines and the number of hands employed:

Name and location.	Annual capacity.	Workmen.
Pennsylvania:		
Baldwin Locomotive Works.....	600	3,000
Pittsburgh Locomotive Works.....	104	600
National Locomotive Works.....	30	160
Porter, Bell & Co.....	52	300
Dickson Mfg. Co.....	96	500
New York:		
Schenectady Locomotive Works.....	144	750
Brooks Locomotive Works.....	100	500
New York Locomotive Works.....	100	500
New Jersey:		
Rogers Locomotive Works.....	90	2,000
Grant Locomotive Works.....	156	700
Cooke Locomotive Works.....	180	800
Rhode Island:		
Rhode Island Locomotive Works.....	156	700
Massachusetts:		
Taunton Locomotive Works.....	96	500
Hinckley Locomotive Works.....	144	750
Mason Machine Co.....	72	400
New Hampshire:		
Manchester Locomotive Works.....	144	750
Maine:		
Portland Locomotive Works.....	72	400
General:		
Railroad shops.....	250	1,250
Totals.....	2,256	14,500

I may have overestimated the capacity of the railroad shops, and they probably do not turn out 250 engines per year. They do not build engines as a business, but they always have one or more on the stocks. They are compelled to retain a certain number of men in their repair shops to be used in cases of emergency, and these are set to work on new engines when there is no other work to do. As soon as there is an accident the new engines have to wait until the damage is repaired. A railroad, accordingly, can place but little dependence on the production of engines from the repair shops, and then these shops have not the facilities of the large locomotive works, and cannot compete with them. A locomotive lasts between 10 and 20 years; the average perhaps is 15 years. You will thus see that 2000 engines must be built every year to take the place of those that go to the scrap heap. This would leave about 800 per year for new railroads and the export trade; the latter takes from 15 to 25 per cent. of the total annual production. There is no reason why 3000 engines should not be easily disposed of every year, and that is more than all the locomotive shops in the country can produce. I cannot, accordingly, see why we should not be continually busy.

The partnership heretofore existing between Stanley B. Smith and James V. Campbell, Jr., Cincinnati, having terminated by limita-

The Forstner Auger Bit

For boring Smooth, Round, Oval or Square holes for letting in Door Locks, Escutcheons, &c.

Sizes in Eighths:	3-8	1-2	5-8	3-4	7-8	1	1-1/8	1-1/4	1-3/8	1-1/2	1-5/8	1-3/4	1-7/8	2
Price Each Brace Bit.....	3-8	1-2	5-8	3-4	7-8	1	1-1/8	1-1/4	1-3/8	1-1/2	1-5/8	1-3/4	1-7/8	2
Mason Machine Bit.....	5-8	3-4	7-8	1	1-1/8	1-1/4	1-3/8	1-1/2	1-5/8	1-3/4	1-7/8	2		
Per Set of Five.....	1-3/8	1-1/2	1-5/8	1-3/4	1-7/8	2								

tion (James V. Campbell, Jr., retiring), the business of Smith & Campbell will be continued under the firm name of Stanley B. Smith & Co. The new firm will continue as agents for the Pittsburgh and Wheeling Coal Co.'s Wheeling Creek steam coal; West Massillon Coal Co.'s Massillon coal; O. Young & Co.'s canal and Camp Creek steam coal.

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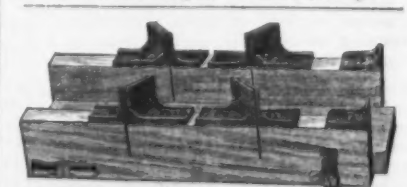
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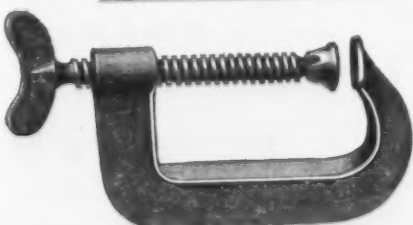
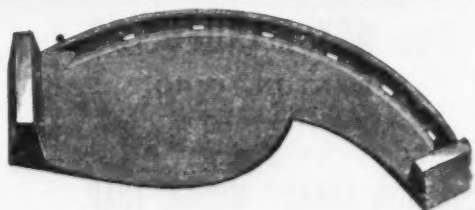
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ware, Iron, Steel and Metals into the Port of
New York for the week ending April 21,
1886:

Hardware.	Wood, Niebuhr & Co.
Baldwin Bros. & Co.	Screw wire rod, coils,
Gun barrels, cs., 6	1548
Baker, Hermann & Co.	Order.
Hardware, cutlery	Old rails, 3491
& guns, pkgs., 63	Wire rods, pkgs., 6000
Curley J. & Bro.	Pig, tons, 2192
Cases, 3	Old flange rails, 1571
Davies, Turner & Co.	Locomotive tires, 18
Mdse., cs., 10	Spiegel, tons, 1056
Degraw, Aymar & Co.	Wrought beams, 250
Chains, 23	Rods, pkgs., 21,005
Chains, cs., 3	Rods, bds, 605
Dickhoff, Raelfflor &	Blooms, 182
Co.	Billets, 2146
Cases, 36	Cruc. wheel tires 57
Downing R. F. & Co.	Tires, 113
Hdw., cs., 84	Wire rods, coils, 259
Drexel, Morgan & Co.	H'vy wright tons, 300
Arms, cs., 18	Ore, bbls., 52
Erwin & Sons,	Steel.
Mach'y., crate, 1	Abbott Jere & Co.
Field, Alfred & Co.	Cases, 40
Casks, 2	Wire, bds., 137
Mdse., cs., 5	Baring Bros. & Co.
Funch, Eddy & Co.	Rods, bds., 3757
Machinery, case, 1	Billets, pcs., 2472
Folsom H. & D.	Baker, Carl F.
Arms, cs., 4	Packages, 8
Gordan Otto.	Brown Bros. & Co.
Bundles, 354	Wheel tires, pgs., 88
Bales, 5	Dolge Alfred.
Hague C. A.	Wire, pkgs., 8
Cases, 3	Drexel, Morgan & Co.
Kastor Adolph,	Billets, 6905
Mdse., cs., 2	Heyn Alf.
Knauth, Nachod & Co.	Rods, pkgs., 394
Boiler, 1	Lazard Freres.
Lau G. H. & Co.	Rods, pkgs., 382
Arms, cs., 2	Meissner, Ackerman &
Markt & Co.	Co.
Cases, 26	Wire, rolls, 1129
McKinless John & Co.	Pesper Chas.
Cases, 2	Steelware, cs., 2
McCoy & Sanders,	Pilditch F. S.
Chains, cask, 1	Cases, 224
Packages, 2	Packages, 127
Merch. Disp. Co.	Plock & Co.
Machinery, case, 1	Rods, bds, 474
Neuss, Hessein & Co.	Rods, pkgs., 466
Case, 1	Wagner W. F.
Perrie J. M.	Bundles, 271
Mach'y., cs., 3	Bars, 42
Sheldon G. W. & Co.	Plates, 92
Mach'y., cs., 8	Cases, 13
Mach'y., pkgs., 5	Order.
Schulte Wm. & Co.	Plates, cs., 5
Cases, 8	Cases, 23
Schloss Bros.	Casks, 2
Ironware, cs., 9	Bars, 311
Steany, Blumenthal &	Tubes, 520
Co.	Plates, 290
Cases, 4	Links, 43
Thiele E.	Angles, 468
Ironware, pkgs., 4	Blooms, 7270
Vom Cleft & Co.	Rods, bds., 43,493
Mdse., cs., 412	Rods, pkgs., 412
Watson, Sumner & Co.	Wire, cs., 11
Mach'y., cs., 18	Bundles, 1277
Ward Asline & Co.	Tubes, cs., 2
Mdse., cs., 3	Scrap, tons, 102
Wiesch, Hilger & Co.	Strips, cs., 32
Chains, cs., 10	Metals.
Anvils, 110	Armstrong A.
Casks, 4	Brass goods, case, 1
Order.	Baker, Hermann & Co.
Cast-iron bowls, 32	Met. cart'ges, cs., 10
Cases, 12	Baring Bros. & Co.
Mach'y., cs., 3	Tin plates, bxs., 3394
Tools, case, 1	Zinc oxide, bds., 100
Knitting machines	Boutleard & Co.
for Canada, bxs., 8	Tin slabs, 2692
Pkgs., 6	Bruce & Cook
Arms, cs., 3	Tin plates, bxs., 1656
Iron.	Antimony, cs., 23
Amsinck G.	Can. Bank of Com'erce,
Scrap, kg., 36,750	Tin, bxs., 1000
Baring Bros. & Co.	Dickerson, Van Dusen
Rolled iron, bds., 130	& Co.
Rolled iron, bars, 124	Tin plates, bxs., 400
Bars, 1978	Tin, bxs., 933
Brockner, Evans & Co.	Gifflian, Wood & Co.
Wire netg, rolls, 1283	Tin slabs, 459
Brown Bros. & Co.	Lau J. H. & Co.
Coils, 858	Ball caps, cs., 3
Coddington T. B. & Co.	Leaycraft & Co.
Sheet, pkgs., 273	Brass, pcs., 50
Sheets, bds., 244	Meyer G. A. & E.
Sheets, cs., 2	Zinc oxide, bds., 100
Crocker Bros.	Pheips, Dodge & Co.
Spiegel, tons, 304	Antimony, cs., 40
Ferromanganese,	Tin plates, bxs., 4346
tons, 302	Tags, bxs., 300
Pig, tons, 300	Pierson C. L. & Co.
Haynes C. A.	The Central Stamping
Castings, cs., 3	Co.
Lalanc & Grosjean,	Tin plates, bxs., 2208
Sheets, cs., 2	Windmueller & Roelker
Lundberg Gust.	Zinc oxide, cs., 153
Rivet wire rods,	Order.
coils, 829	Tin pbs., bxs., 21,731
Naylor & Co.	Copper ingots, 15,791
Wire rods, coils, 497	Bismuth, pkgs., 7
Nail rods, bds., 358	Quicksilver, bottles,
Pig, tons, 150	850
Perkins C. & Co.	Lead, pgs, 794
Spiegel, tons, 500	Tin, slabs, 6017
Stetson Geo. W. & Co.	Antimony, cs., 255
Pig, tons, 106	Cop. ingots, cs., 197
	Tin ingots, 710

The importations of Hardware, Cutlery
and Metals for the first quarter of the year
1884 at this port are as follows:

Quantity.	Value.
Anvils.....	968 \$7,096
Antimony.....	731 7,270
Brass goods.....	480 30,860
Bismuth.....	23 13,165
Bronzes.....	189 15,334
Chains and anchors.....	357 12,174
Copper.....	29,157
Copper ore, 4000	27,688
Clocks.....	350 30,088
Cutlery.....	1,215 365,243
Dutch metal.....	123 27,963
Guns.....	684 105,050
Hardware.....	150 14,881
Iron, pig, tons.....	14,334 173,630
Iron, sheet, tons.....	322 24,207
Iron, spiegel, tons.....	16,065 487,728
Iron, ore, tons.....	7,860 21,708
Iron tubes.....	494 542
Iron, other, tons.....	18,350 439,928
Lead, pigs.....	41,014 143,928
Machinery.....	2,152 30,088
Metal goods.....	4,251 355,613
Nails.....	1,061 11,755
Needles.....	207 68,633
Nickel.....	105 35,515
Old metal.....	12 42,498
Plating.....	26 95,117
Plated ware.....	166 15,221
Percussion caps.....	30 1,471
Quicksilver.....	223 20,050
Regulus antimony.....	132 33,347
Saddlery.....	774 37,688
Steel.....	784,191 793,569
Spelter, lb.....	1,415,585 48,108
Types metal.....	12 2,599
Tin plates, bxs.....	452,153 1,893,418
Tin slabs, lb.....	6,041,729 1,322,924
Wire.....	3,867 30,321
Zinc, lb.....	571,373 21,281
Zinc oxide.....	2,372 19,698

The following shows the importations at
this port for the week ending April 16:

Quantity.	Value.
Clocks.....	47 \$5,647
Copper.....	2,423
Cutlery.....	65 20,114
Dutch metal.....	11 3,149
Guns.....	40 5,267
Gun wads.....	1 8
Hardware.....	13 462
Iron, pig, tons.....	1,650 18,859
Iron, sheet.....	32 1,717
Iron, spiegel, tons.....	2,399 40,282
Iron ore, tons.....	802 1,657
Iron, other, tons.....	799 11,355
Lead, pigs.....	3,296 12,493
Machinery.....	121 2,599
Metal goods.....	304 27,971
Nails.....	6 423
Needles.....	14 6,014

Old metal.....	2,050
Platina.....	2,010
Percussion caps.....	218
Steel.....	85,835
Tin, bxs.....	105,500
Tin, 2,397 slabs; 245,331 lb.....	16,757
Wire.....	70,790
Zinc oxide.....	57,912
	3,822
	1,685

The Production of Coal in Great Britain.

The returns relating to the quantity of coal raised in Great Britain in 1885 again show a falling off as compared with the previous two years. This fully bears out what has been urged—that there was not much to be apprehended from the views of specialists and alarmists as to the probable time when England's stores of fuel would be exhausted. There is no question that the estimates made some years since at the instance of the Royal Commission on Coal as to the quantities of fuel in known as well as concealed fields in England at a depth of 4000 feet from the surface were as accurate as could be desired; but it is very different with respect to the deductions made as to the probable yearly increase in the consumption. It was held by an eminent writer that the increase might be taken at the rate of 4,000,000 tons a year, and on this hypothesis it was easy to determine how long the coal would last. But in this calculation nothing was allowed for any changes which might take place as the result of scientific investigation having for its object the lessening of the consumption of coal for most purposes. As it is, within the last few years there has been a considerable reduction in England in the quantity of fuel required to produce a ton of pig iron, and more recently inventions have caused a decrease in the requirements for boilers. This must lead to a still further decline in the consumption of coal in industries where very large quantities are used. However, in examining the quantities of coal raised during the last 16 years, it is found that, so far from there being an annual increase of a somewhat uniform character, it has been quite the reverse. In one year, for instance, there was an increase of nearly 7,000,000 tons, and in another one a falling-off of upward of 2,000,000 tons. The greatest increase in any one year was in 1850, being upward of 13,000,000 tons, as compared with the previous year. This certainly looked alarming, especially as it was followed up in 1851 by an increase of more than 7,000,000 tons. The tide turned, however, in 1854, when there was a decrease of more than 3,500,000 tons, while 1885 now shows a decline on the previous year. Indeed, it appears that 4,385,966 tons less coal was raised in 1885 than was the case in 1883. The following figures will, however, show the quantities of coal raised during the last 16 years, the number of persons employed in the mines and the prices of coal sold to merchants:

Year.	Tons.	Employed.	Price.
1870.....	110,441,192	350,894	\$ d.
1871.....	117,352,000	370,861	17 3
1872.....	123,437,300	418,086	23 10
1873.....	127,016,700	512,199	31 8
1874.....	125,057,500	538,829	24 8
1875.....	131,867,100	535,845	22 9
1876.....	133,344,900	514,582	30 2
1877.....	134,610,700	494,391	18 8
1878.....	132,610,900	475,329	16 10
1879.....	135,808,000	476,810	16 11
1880.....	146,969,000	484,933	14 11
1881.....	154,184,300	495,477	15 3
1882.....	156,499,977	501,840	15 4
1883.....	168,737,227	514,833	15 4
1884.....	160,757,779	530,376	15 3
1885.....	159,351,361	Est. 519,500	Est. 15 6

When coal began to advance in price there was an increased number of men employed at the pits as compared with the quantity of coal raised, and this was more especially the case in 1873, when the price of coal reached the highest point, and when miners' wages went up accordingly. With the decline in prices, however, there was a marked falling off in the number of persons employed, looking at the quantity of coal raised, and, of course, a very much larger tonnage was raised per man. In fact, the price of coal regulated the miners' wages, and was the barometer which regulated the output of coal, as well as the working days of the miners—the higher the wages the less work done, and vice versa.

The Future of the Luxembourg Iron-Ore Deposits.—In connection with the proposed light railways and branch lines of normal gauge in the Grand Duchy of Luxembourg, a discussion has arisen between the Council of State and the Government with reference to the mineral wealth of the country. If, according to the former, 370 acres of iron-ore bearing property be granted as an inducement to the concessionaires for making the lines, there would only remain a little more than 1236 acres still to be conceded, and if the consumption of the home blast furnaces were reduced to this source of supply they would exhaust it in 58 years. But, on the other hand, it appears from the report dated September 12, 1885, of the Government mining engineer, after a Government survey and investigation, that there are still left in the Canton of Each nearly 2690 acres of mining property. After deducting the 370 acres which it is proposed to grant as subvention for the new railways, there would still remain about 2545 acres for feeding the home furnaces. Now, the ironmasters have already received 817 acres in concession, according to the terms of the law; and the State mining engineer reports that, up to the end of last year, only about 38 acres have been worked out. But, in addition to the concessible property—that is to say, all that lies below a certain geological level, and which is reserved by the State to grant as subventions for fostering the national industry—there is a vast quantity of surface ore belonging to the owners of the soil. This originally amounted to about 4685 acres, and nearly 2753 acres are still intact. Though considerable quantities of the ore raised from these outcroppings are exported to the neighboring countries of France and Belgium, a portion remains available for the home furnaces. Taking all the sources together the State mining engineer comes to the conclusion that there is sufficient ore left in the country to keep the Luxembourg furnaces going for about 100 years.

"PENNSYLVANIA."

We defy any one to produce its equal. The Pennsylvania Lawn Mower Works have now in their possession a 16-inch Pennsylvania Mower which was sold to an institute in this State, which was used nearly every working day constantly from the day it was purchased until they got it in their possession. This mower cut 500 acres of grass, was sharpened but once during use, and, although it has not been sharpened since it came from the ground, nevertheless will cut the finest paper.



Has No Equal,

Surpassing All Others

AND PRONOUNCED

"THE BEST."

Illustrated Price Lists sent upon application.

Please write for same to
LLOYD & SUPPLEE HARDWARE CO., Phila.
J. C. McCARTY & CO., New York.
AMES PLOW CO., Boston, Mass.
SIMMONS HARDWARE CO., St. Louis, Mo.
HAMILTON & MATHEWS, Rochester, N. Y.
MARKLEY, ALLING & CO., Chicago, Ill.
LOGAN, GREGG & CO., Pittsburgh, Pa.
JANNEY, SEMPLE & CO., Minneapolis, Minn.
HUNTINGTON, HOPKINS & CO., San Francisco and
Sacramento, Cal.
FOSTER, STEVENS & CO., Grand Rapids, Mich.
GEO. TRITCH HDW. CO., Denver, Col.
MOOREHOUSE, WELLS & CO., Decatur, Ill.
A. E. BONESTEELE, Troy, N. Y.
WALBRIDGE & CO., Buffalo, N. Y.

1886 PENNSYLVANIA LAWN MOWER.

"QUAKER CITY."

The trade will soon find an ordinary and roughly-made Reel of blades and stationary knife is not all that is required to make a perfect Lawn Mower.

THE QUAKER CITY LAWN MOWER. 1886.

Guaranteed
Superior to any
other Center Cut
MOWER
on the market.

THE QUAKER CITY

Reduced in Price.

NOW, WHY BUY A WORTHLESS MOWER?

Send for List.

LLOYD & SUPPLEE HDW. Co., Philadelphia.
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"CONTINENTAL."

The Cylinder Knives are solid cast steel, made by a patented process; are hardened and tempered in oil; self-sharpening and never require a file or stone after leaving the factory. All the bearings are long, so that the wear on the Mower will be slow, and oil seldom required. It is made to run at high speed, and will not only cut higher grass, but leaves the lawn perfectly smooth.



Continental Lawn Mower. 1886.

LIGHTEST RUNNING
AND
SWIFTEST CUTTING.

CONTINENTAL LAWN MOWER CO., PHILADA.

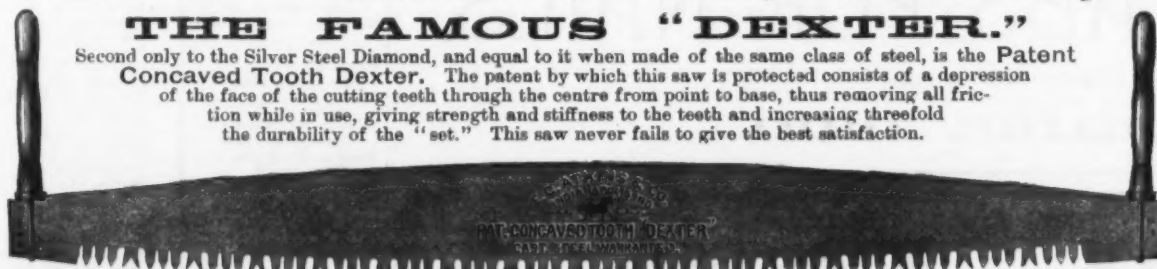
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BIGELOW & DOWSE, Boston, Mass.
STEELE & AVERY, Rochester, N. Y.
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ISAAC WALKER HDW. CO., Peoria, Ill.



E. C. Atkins & Co., Indianapolis, Indiana.

THE FAMOUS "DEXTER."

Second only to the Silver Steel Diamond, and equal to it when made of the same class of steel, is the Patent Concave Tooth Dexter. The patent by which this saw is protected consists of a depression of the face of the cutting teeth through the centre from point to base, thus removing all friction while in use, giving strength and stiffness to the teeth and increasing threefold the durability of the "set." This saw never fails to give the best satisfaction.



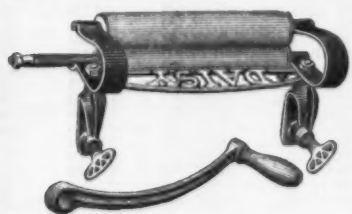
Ground substantially uniform gauge on the toothed edge, and any gauge required on the back.

ATKINS' SAWS

Cross-Cut, Circular, Band and Gang

Are Everywhere Recognized as the
Standard of Excellence.

The "Daisy" Wringer.



Simple! Efficient! Durable!

Solid White Rubber Rolls.

EMPIRE BENCH WRINGER.



Combining the "Empire" Purchase Gear Wringer with the "Empire" Folding Wash Bench.

Tub Wringers, Bench Wringers, Folding Wash
Benches, Folding Cot Beds, Folding Clothes
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CATALOGUES FREE.

Empire Wringer Co.,
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AMHERST WATER MOTOR

Parties looking for a noiseless, economical and efficient Power will do well to send for descriptive Catalogue, free.

Amherst Hydraulic Motor Company
HOLYOKE, MASS.



THE Automatic Lawn Rake.

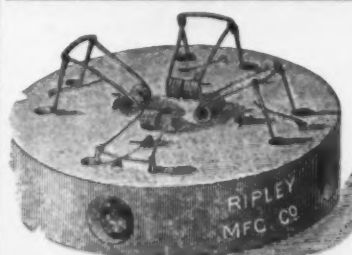
Light, Neat, Durable and Easy
to Operate.

This Rake will free itself from all grass or leaves, wet or dry, at every stroke without changing position of the Rake or operator. It obviates all unpleasant trouble. It cleans itself without any extra labor or loss of time on the part of the operator. Write for prices and circular.

MANUFACTURED BY

The NEY MANUFG. CO.,
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For sale by the Trade generally.



"COMMON SENSE" MOUSE TRAP. BEST IN MARKET.

For Home & Export Trade.

RIPLEY MFG. CO.,
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Manufacturers of
Porcelain-Lined Lemon Squeezers, Mallets, Rose-
Wood Faucets, Patent Boot Jacks and Hard-
ware. Fine Wood Turning a Specialty.



HUGININ Improved Adjustable SASH BALANCES, Mechanical Substitute for Weights, 3 Sizes.

Sashes work as with weights. No clock springs to rust out or set. No latches or attachments to the Sash. No. 1, 1 1/2 in. wide, \$1.25 per set; No. 2, 1 3/4 do., \$2.00; No. 3, 2 do., \$3.00. Gray Iron, screws included. Malleable, No. 1, \$1.25; No. 2, \$1.50; No. 3, \$2.00, per set 4. Robt. B. Huginin, Patent and Solely Authorized Maker, is cast on the face-plate of genuine improved goods. The unimproved No. 2's have been fraudulently copied, with date of my minor patent, Nov. 6, 1877—never used on the genuine. I still sell this (unimproved) style at half price. The improved are made under the care of the inventor and are warranted to give satisfaction. Sample sets mailed on receipt of list price only. Goods delivered in New York free. Address orders, &c., to ROBT. B. HUGININ, Hartford, Conn., U. S. A.

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Easy. Graceful. Elegant.



The motion and position of the rider are healthful, pleasant and invigorating. It is finely finished and upholstered. Has the fewest frictional bearings possible: runs the easiest; no chains or gearing to catch or wear clothing. Durable and strong. A good hill climber, and can be ridden where other machines fail.

IT IS THE PERFECTION OF ALL.
Children's sizes, with 24, 28 or 32 inch rear wheels, at \$10.00, \$12.00 and \$15.00. Larger sizes for adults and invalids. Agents wanted.

THE FAY MFG. CO., Elvria, O.
Mention this Paper.

THE NEW EASY LAWN MOWER.

The leading mower in the market.
Front Cut. Steel. Open
Roller Traction. Easy
and Noiseless in
Operation.

The only mower that will
cut Wet Grass, Narrow
Borders, and close to walls
and fences. Warranted in
every particular.

Manufactured by
BLAIR MFG. CO.,
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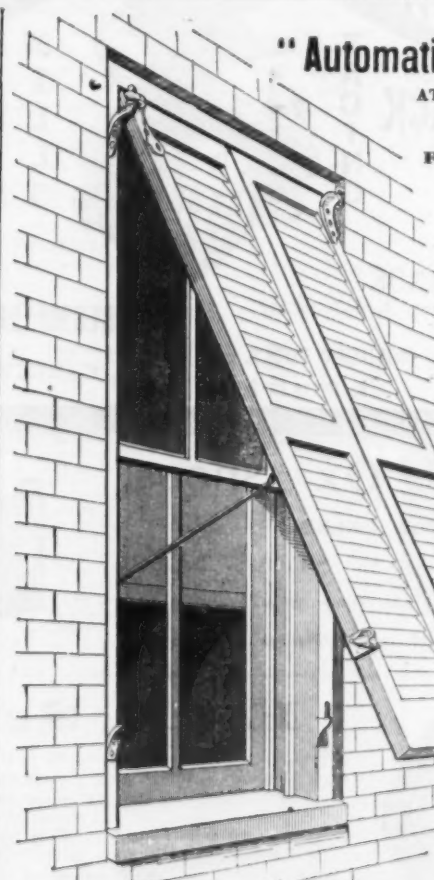


Medium Size "NEW EASY."

THE "Automatic" Blind Awning Fixture.

ATTACHABLE TO OLD AS WELL AS NEW BLINDS ON FRAME OR BRICK HOUSES.

For Sale by all the Hardware Trade.



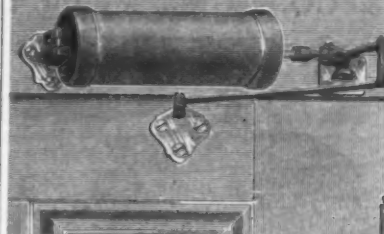
The very best Blind Hinge and a perfect Awning Fixture. No cloth to tear and wear out. No iron frames to shake and rattle. Blinds instantly converted to awnings. Awnings instantly converted to blinds. No skilled labor necessary to apply them. A child can operate them. Indispensable for Summer Hotels and Dwellings. Rooms always cool and shady. Many thousands in successful operation. Models furnished to architects.

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MANUFACTURERS,
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THE SHAW DOOR CHECK AND SPRING.

GREAT REDUCTION IN PRICE.



The SHAW DOOR CHECK AND SPRING CO. have removed to their new factory, and with their increased facilities for manufacturing their goods have decided to reduce the price of each Spring \$1.00 from former list, and thereby bring the machine within the reach of all.

The SHAW CO. are the owners of the oldest patented device for closing doors noiselessly, and with their new improvement produce the only check and spring which the trade can sell as general hardware. The same spring can be applied to either hinge or jamb side of both right or left hand doors.

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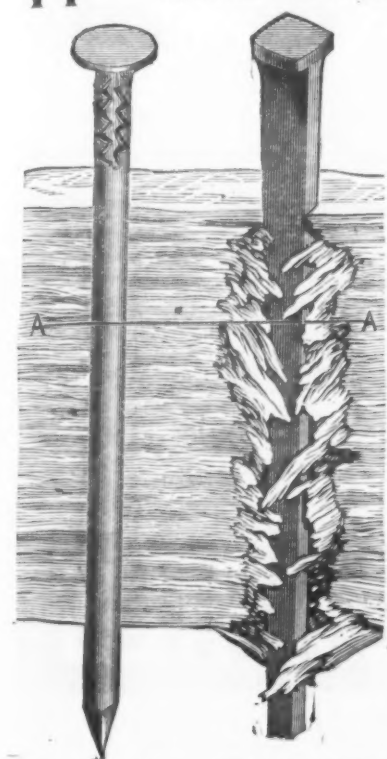
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BOLTS, NUTS, RIVETS and WASHERS,
CHAMFERED AND TRIMMED
SQUARE AND HEXAGON NUTS A SPECIALTY.

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SALEM, OHIO,
MANUFACTURERS OF
WIRE and WIRE NAILS.



The above cut represents the effect on wood of a Cut Nail and a round, pointed Steel Wire Nail.

The Steel Wire Nail is just as cheap as the Cut Nail, and far preferable to use.

Write for Price List and Discounts.

We Are Headquarters FOR Penny Wire Nails. MINERAL WOOL

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An Indestructible Material.

The BEST and CHEAPEST material known for

INSULATION OF HEAT,

PROTECTION AGAINST FROST,

PREVENTION OF SPREAD OF FIRE,

FREEDOM FROM RATS, MICE & INSECTS.

DEADENING OF SOUND.

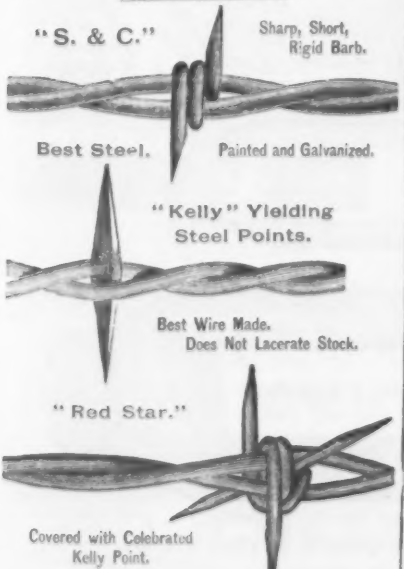
Used in buildings. It keeps the TEMPERATURE UNIFORM, SAVES largely in the EXPENSE of heating; renders the walls and floors exempt from the CONDUCTING OF SOUND. Completely NON-COMBUSTIBLE. It is very valuable for FIRE-PROOFING. AS A NON-CONDUCTING COVERING for Steam Pipes, Boilers, Drums, Hot Air and Blast Pipes, and all heated surfaces, and as a Protection against Frost for Waste Pipes.

Mineral Wool is Invaluable.

Over Ten Million Pounds in Use.

For Samples, Information and Prices, address
The Western Mineral Wool Co.,
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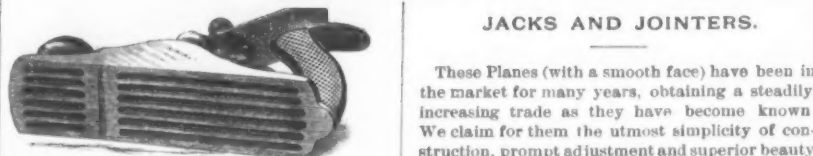
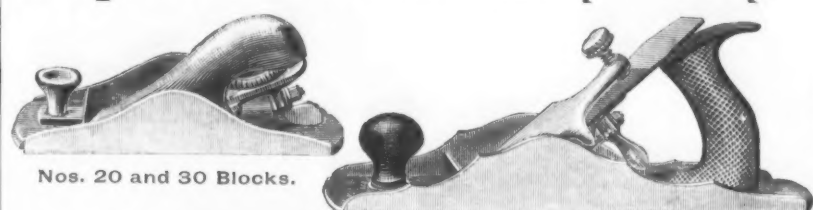
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Chaplin's Patent Iron Planes.



SMOOTH PLANE.
CORRUGATED BOTTOM.
This Cut shows the surface of our new Corrugated Iron Planes. The corrugations afford ample air spaces, and reduce the traction and friction to the minimum. Same price as smooth face.

CORRUGATED FACE.	SMOOTH FACE.
No. 205, Iron Smooth Plane, 7x1 1/2 in. Cutter.....	\$3.50
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With Adjustable Throat.
No. 233, Iron Smooth Plane, 8x1 1/2 in. Cutter..... \$3.50
No. 235, Iron Smooth Plane, 9x2 in. Cutter..... 3.75
All of these Planes are Nickel-Plated finish.
This Adjustable Mouth Smooth Plane is a new feature, and meets with a great deal of favor.
No. 30, Block Plane, Japanned, 6 1/2 x 1 1/2 in. Cutter..... \$1.40
No. 30, Block Plane, Nickel-Plated, 6 1/2 x 1 1/2 in. Cutter..... 1.65
Both with Adjustable Throat.

THE FOLLOWING JOBBERS CARRY A GOOD ASSORTMENT:
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A. F. SHAPLEIGH & CANTWELL HDW. CO., St. Louis.
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EDWIN HUNT'S SONS, Chicago.
RUHL, SONS & CO., Detroit.
WM. FRANKFURTH HDW. CO., Milwaukee.
FARWELL, OZMUN & JACKSON, St. Paul.
JANNEY, SEMPLE & CO., Minneapolis.
MILLER BROS. & FLETCHER, Minneapolis.
BLISH, MIZE & SILLIMAN, Atchison.
PARK, CRANER & CO., Leavenworth.
ROGERS & BALDWIN HDW. CO., Springfield, Mo.
FROTHINGHAM & WORKMAN, Montreal, Can.
CAVERHILL, LEARMONT & CO., Montreal, Can.
WM. THOMSON & CO., Toronto, Can.
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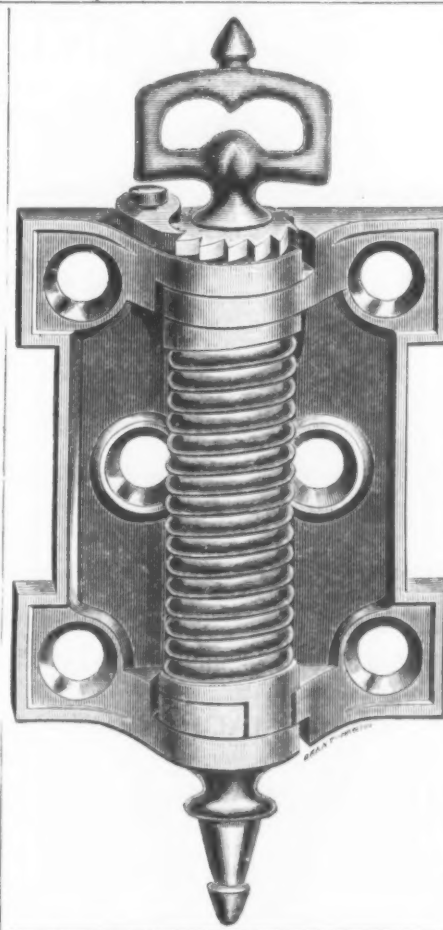
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MOORE MFG. CO.,
165 Lake Street,
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Manufacturers of
Moore's Differential PULLEY BLOCKS.
OVER 20,000 IN USE.
"NOVELTY"
TACKLE BLOCKS,
With Wrought Iron Hooks, Malleable Iron Shells, Steel Pins and Steel Roller Bushings.
Five sizes now ready with single, double and triple sheaves for 1/2, 3/4, 1, 1 1/4 and 1 1/2 inch rope.
Send for Illustrated Catalogue.

THE SAMSON JACK.
POOR & WOLFE.
SUCCESSORS TO SAMSON JACK & PRESS CO.,
BLACK RIVER, N. Y.,
Manufacturers of
MALLEABLE IRON WAGON JACKS.
Can be had direct from us or from following Houses:
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G. W. VAN TINE & SON, No. 504 Commerce St., Philadelphia, Pa.
GOULDS & AUSTIN, No. 167 Lake St., Chicago, Ill.
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A. F. SHAPLEIGH & CANTWELL HDW. CO., No. 144 N. Main Street, St. Louis, Mo.
Manufactured in Three Sizes, of the Very Best Malleable Iron.
Warranted to lift any weight up to 7000 pounds.
SEND FOR ILLUSTRATED CATALOGUE.

COVERT MANUFACTURING CO.
TRADE MARK.
BUY SNAPS, CHAINS AND ROPE GOODS
BEARING THE ABOVE TRADE MARK.
They cannot be equalled in price and quality. Are standard the world over.
For sale by all leading Jobbers at factory prices.
Send for illustrated Catalogue and Price List.
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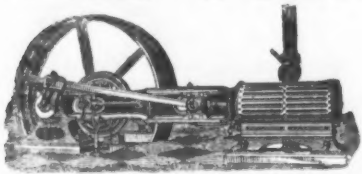
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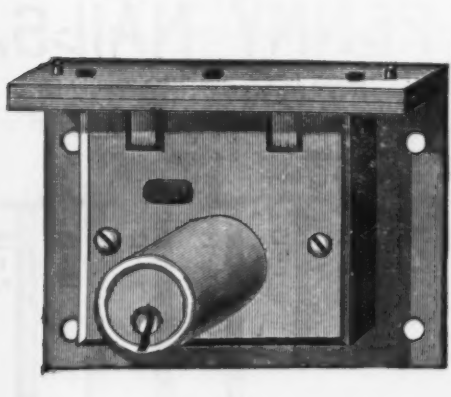
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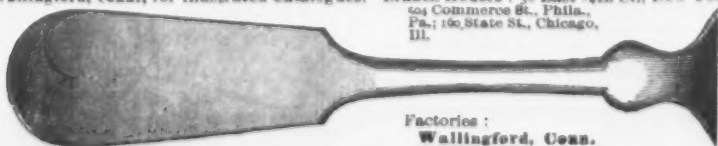
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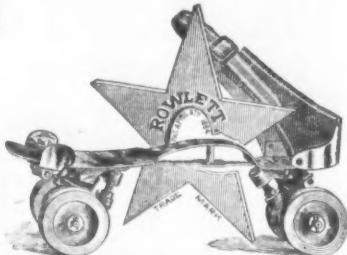
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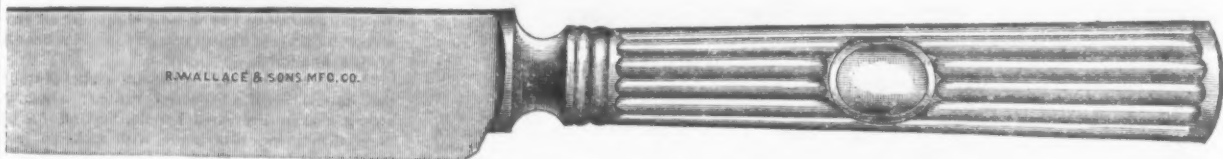
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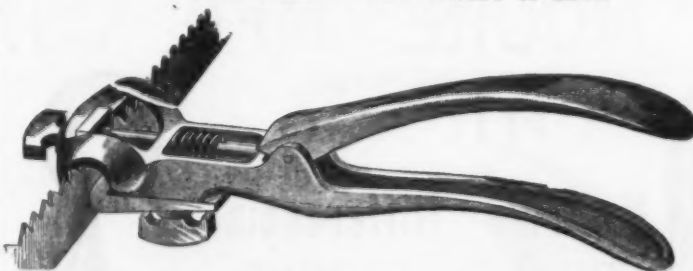
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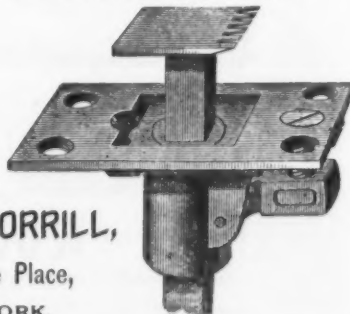
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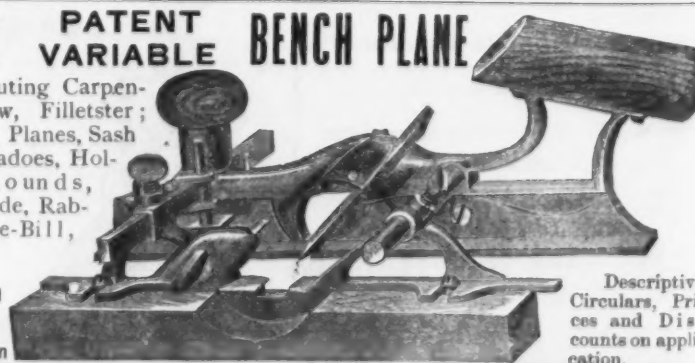
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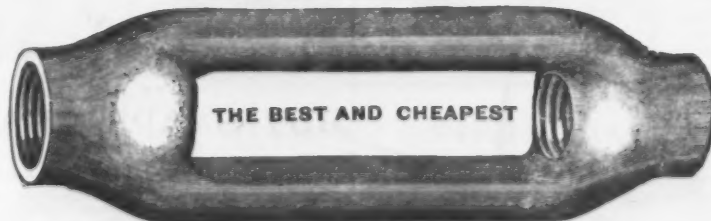
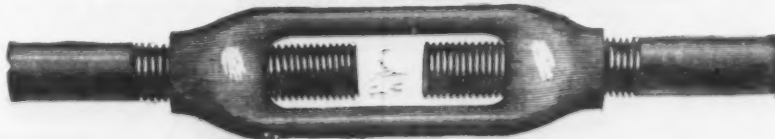
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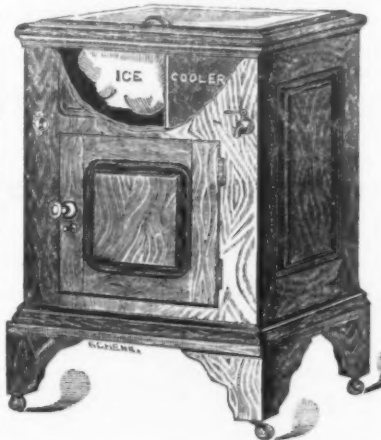
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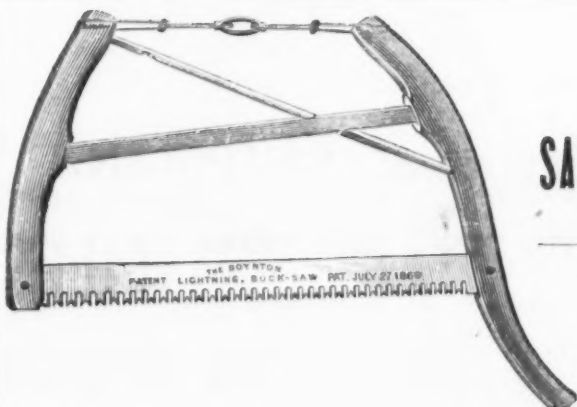
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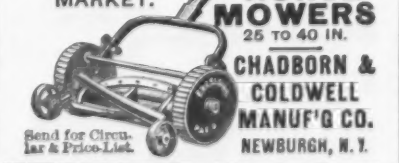
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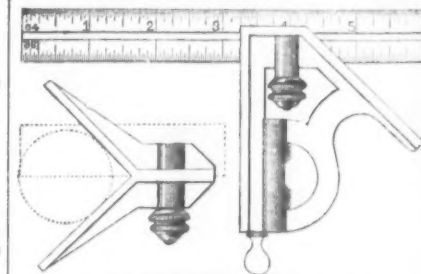
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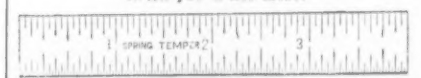
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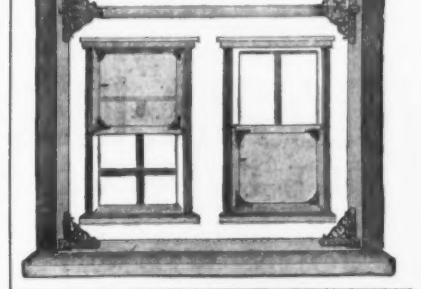
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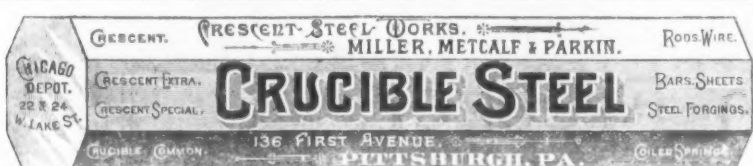
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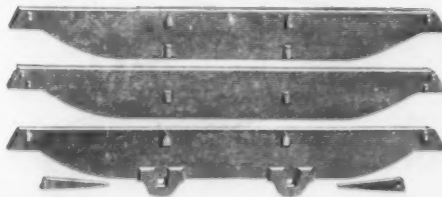
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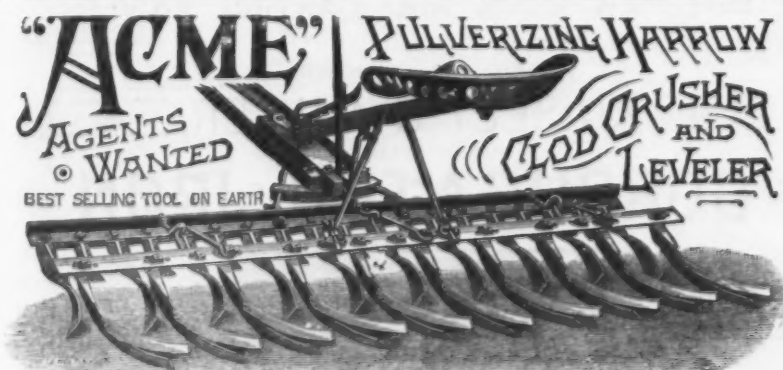


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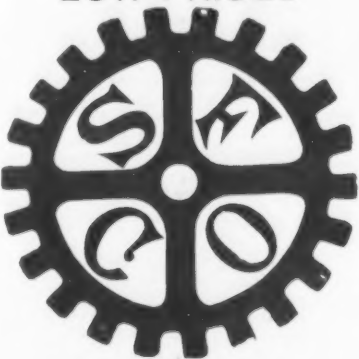
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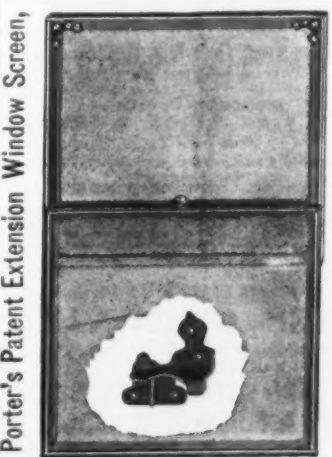
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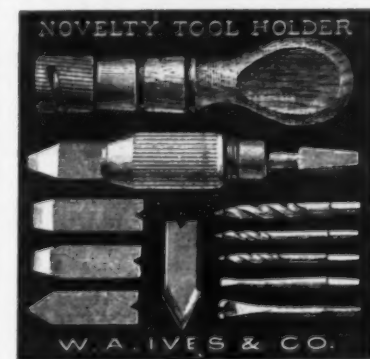


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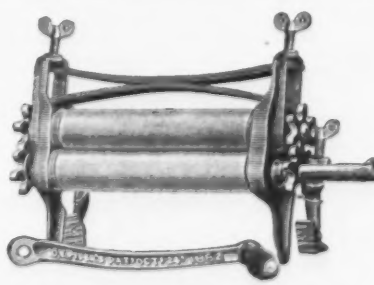
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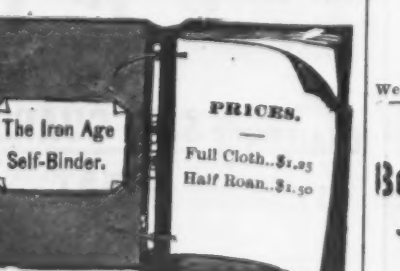
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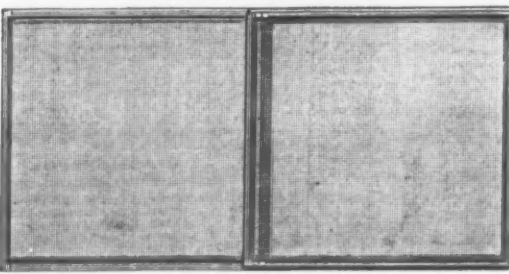
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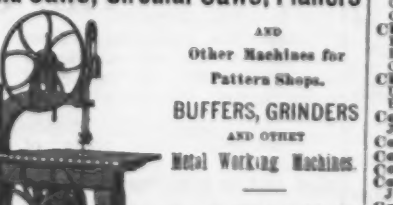
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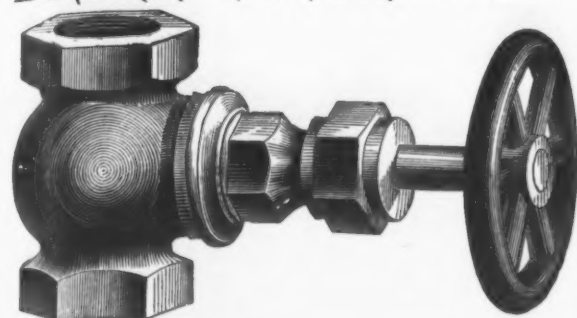
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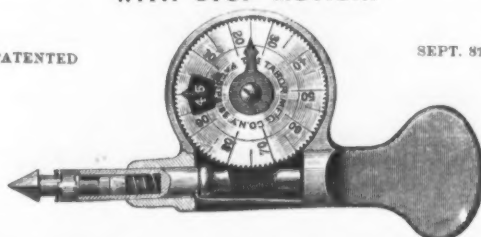
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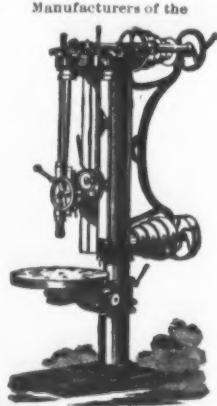
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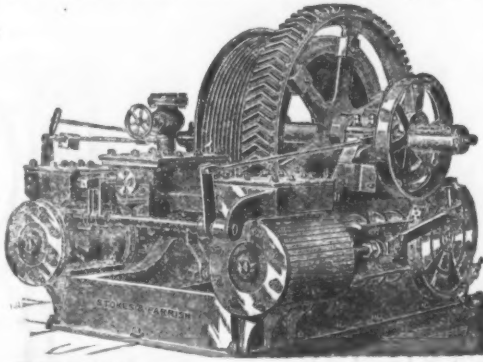
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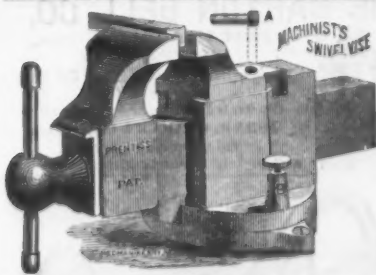
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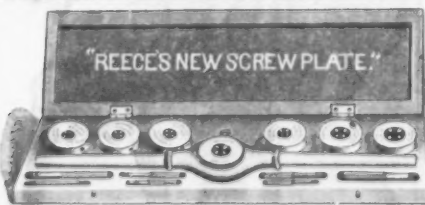
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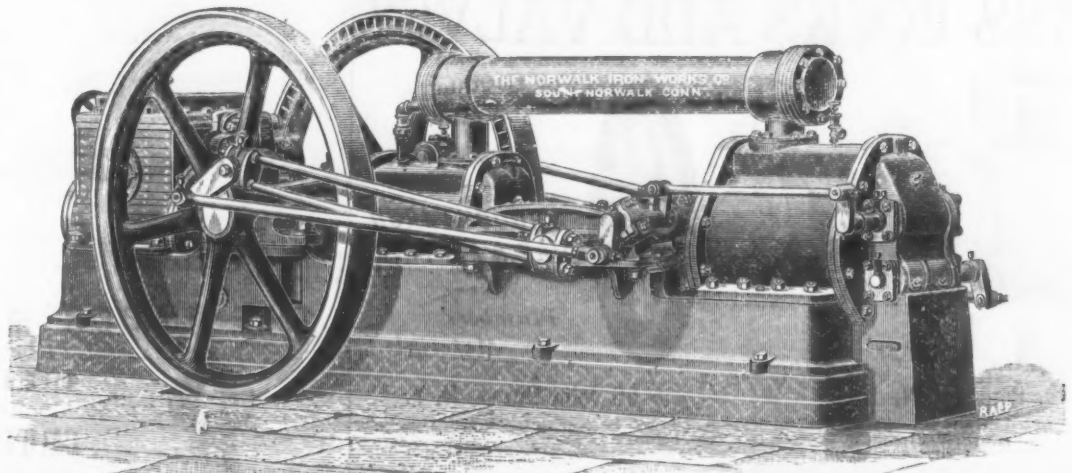
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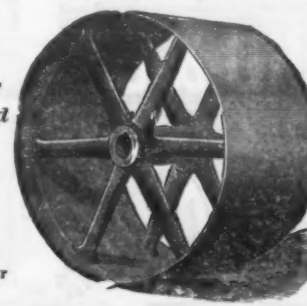
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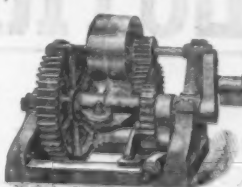
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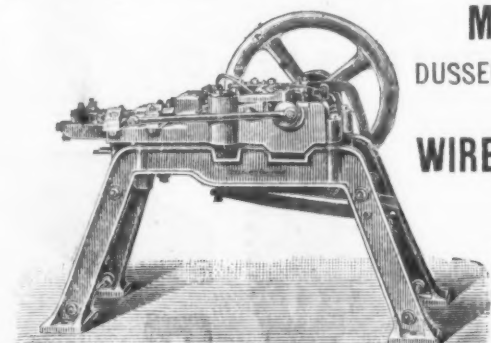
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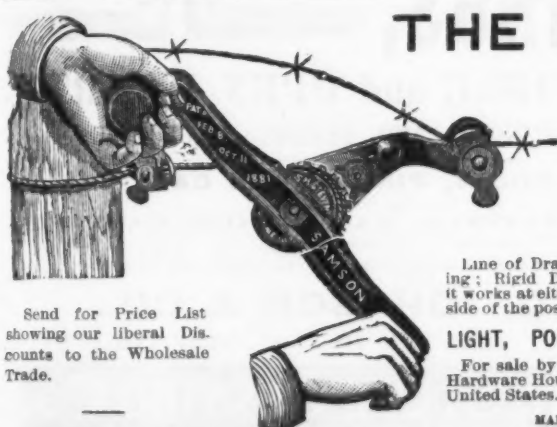
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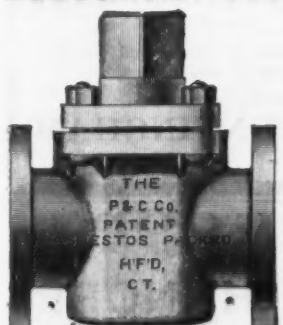


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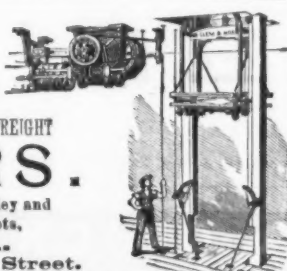
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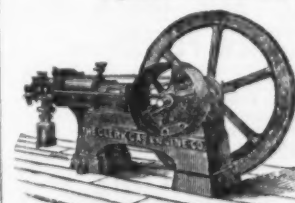
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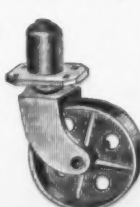
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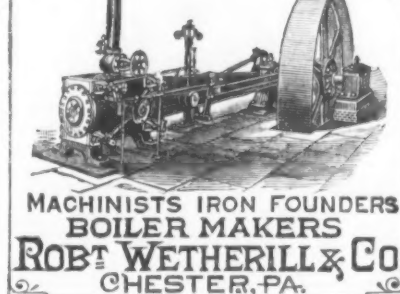
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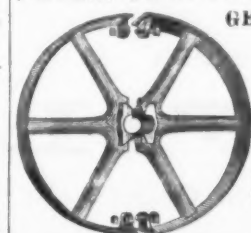
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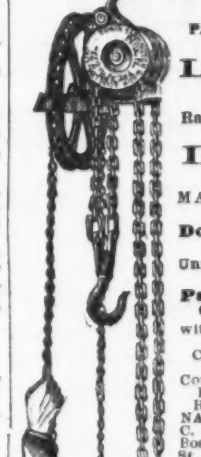
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